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ON THE PREPARATION OF DEODORIZED TINCTURE OF OPIUM.

By Albert E. Ebert.

Among the many new preparations incorporated in our present codex, and exemplifying the progress of pharmaceutical science, none, perhaps, was greeted with more satisfaction by physician and apothecary than the deodorized tincture of opium. Combining, in a liquid form, all of the narcotic properties of the drug, without the noxious, odorous and resinous principles, it is capable of producing the soporific effects of opium without subsequent prostration of the nervous system.

Notwithstanding the acknowledged advantages of the deodorized tincture, it has not been so generally used as was expected, and this fact may be partially explained, at least, by considerations of cost. Its expensiveness is due, in great measure, to the waste of the ether employed in the process of the deodorization, for, though the separated portion of this liquid may be rendered available for subsequent use by distillation, this method of purification is not practicable with the majority of the pharmaciens, and without especial precaution it is attended with a risk greater than the value of the ether. These facts discourage the apothecary, and tend to place the preparation of the tincture solely in the hands of the wholesale manufacturer. With the view of regaining this ether without resort to dis-

tillation I made numerous experiments, and finally discovered a method by which the object may be accomplished at a trifling cost, and with little trouble. Upon the addition of a caustic alkali to the etherial solution the odorous, resinous, and coloring matters are nearly all withdrawn, and the ether is fitted for future use as a deodorizer. The process is as follows: Take of common caustic potassa one troyounce; place it in one pint of the ethereal solution, having previously added two fluidounces of water, and agitate occasionally for twenty-four hours. Decant the ether, mix it with four fluidounces of distilled water, allow it to separate; again remove the ether and keep it for further use.

While engaged in the foregoing manipulations, I conceived the idea of substituting for the ether the light product, obtained in the rectification of petroleum, known as "benzine." A trial of this solvent convinced me of its applicability, and, after a series of carefully conducted experiments, I became convinced of its decided superiority. The results of my investigation, with the attending advantages, may be stated as follows:— The odorous and resinous matters in the aqueous solution of opium are more completely removed by benzine, while the morphia is not dissolved to a greater extent than by the use of ether.

Benzine does not extract codeia or narcotina; ether removes the former partially, and the latter altogether, from the solution. A practical advantage in the use of benzine is the facility with which it may be separated from the deodorized solution. It is only necessary to pour the mixture on a moistened paper filter, when the watery extract will rapidly pass, admixed with but a trace of benzine, which may be expelled by a comparatively slight application of heat. Economically considered, (its cost being but $\frac{1}{25}$ that of ether,) the advantage of using benzine is important, as its use may exert an influence on the general employment of deodorized tincture of opium. The following formula, involving the use of benzine, is nearly in the language of the Pharmacopœia.

Deodorized Tincture of Opium.

Take of opium, dried, in moderately fine powder, 2½ troy-

ounces; Benzine, sp. gr. ·700 to ·730, (or of such purity that, when dropped on white paper, and allowed to evaporate spontaneously, leaves no stain;) Alcohol, each half a pint; water a sufficient quantity. Macerate the opium with half a pint of water for 24 hours, and express; then repeat the operation twice with the same quantity of water; mix the expressed liquids, and, having evaporated the mixture to four fluidounces, shake it, when cold, in a bottle, repeatedly, with the benzine; allow it to stand for about eight hours, and separate; then pour the mixture on a paper filter, previously moistened with water. When all of the watery solution has passed, decant the benzine, and wash the filter with a small quantity of water, so as to avoid loss; evaporate the liquid by a gentle heat, until all traces of benzine have disappeared; mix this with twenty fluidounces of water, allow the mixture to stand a few hours, and filter through paper; when the liquid has ceased to pass, add sufficient water through the filter to make the filtered liquid measure a pint and a half; lastly, add the alcohol, and mix them together.

It has long been admitted that aqueous solutions of opium act more favorably on the system than those prepared with alcohol, or than the drug itself. It has also been observed that the narcotic power of the aqueous preparations is not in exact proportion to the drug represented, being somewhat less. How far this diminished sedative effect, and the increased pleasantness of action, is due to the absence of the usual quantity of narcotina, (which is but imperfectly abstracted from opium by water,) or to the removal of the odorous, resinous and fatty principles, has not, so far as I am aware, been satisfactorily determined.

Deodorized tincture of opium, as before intimated, when made with ether, can contain but little narcotina, and only a portion of the codeia of the drug.

A literal interpretation of the officinal name would indicate a faulty nomenclature; for, besides being deprived of odor, at least one important alkaloid is, to a considerable extent, absent from the tincture.

A deodorized preparation, more nearly representing the

alkaloids of opium, and, consequently, better deserving the officinal *title*, but which, for distinction, I will designate *Purified Tincture of Opium*, may be made as follows:—

The first step of the process being the preparation of *deodorized opium*, which might prove a substitute for the expensive article known as "denarcotized opium."

Deodorized Opium.

Take of opium, in moderately fine powder, 2½ troyounces; Benzine, sp. gr. ·700 to ·730, a pint; macerate the opium with half a pint of benzine for twelve hours; separate the benzine by decantation, and repeat the operation again with the same quantity of benzine; then pour it on a paper filter, and, when the liquid has ceased to pass, dry it by means of a gentle heat.

Purified Tincture of Opium.

Take of deodorized opium, the product from 2½ troyounces of powdered opium; alcohol, water, each a pint; proceed as directed for preparing tincture of opium, U. S. P.

I suggest these new preparations with some hesitancy, and would not be understood as recommending untried substitutes for articles of ascertained value.

It is with the desire to further elucidate the therapeutics of this valuable drug that I advance these ideas, hoping, at some future time, to be able to add some experimental results to these theoretical speculations.

Chicago, Illinois, March, 1867.

ON LIQUOR MAGNESIÆ CITRATIS.

By Charles B. Allaire.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

This favorite remedy has been before the public for the last nineteen years, and at the present day there seems to be no greater uniformity in its preparation than formerly. The processes given in the Pharmacopœias of 1850 and 1860 are adopted by no one, as the inconvenience and impracticability of preparing it extemporaneously is apparent. Commercial carbonate of magnesia, or magnesia alba, is used by some in

making this preparation, while others use the calcined, sometimes freshly-burned, but, in a majority of cases, after it has been standing more or less time, absorbing moisture and carbonic acid from the atmosphere, others using the freshly-precipitated carbonate in the form of a magma, and some employ carbonic acid apparatus in the process. I might mention many methods of preparing it, all of which only tend to confuse matters, and make the solution of various and unknown strengths. For instance, a solution is made by a certain formula, using magnesia from a newly-opened can; the combination takes place without effervescence or other signs of combination than a rise in temperature. Two months later, the solution is made by the same formula, the magnesia in the meantime having been exposed more or less to the action of the surrounding atmosphere; the result is a rapid evolution of gas, showing that the magnesia has absorbed moisture and carbonic acid. It is obvious that the second solution is weaker than the first, containing relatively less magnesia and more citric acid, so that a salt is obtained of unknown compo. sition. A knowledge of these facts has led me to a further investigation of the subject.

Four hundred and fifty grains of citric acid require for saturation $134\frac{66}{201}$ grains of magnesia, (201 : 60 : : 450 : $134\frac{66}{201}$,) or about fourteen grains more than the designated amount in the officinal formula, so that the salt formed in that solution contains nearly three equivalents of base. This, we know, does not furnish a permanent solution; hence, we look for a salt of different composition, with which to make a permanent solution. Prof. Maisch suggests an *acid* salt, the one containing two equivalents of magnesia. This could be very easily obtained, if we knew the composition of the magnesia used; but, as this cannot be done without a special examination, we take the following method of obtaining this two-thirds salt in solution. For one bottle,

Take of	Citric acid,	387 grains.
	Magnesia or carbonate,	q. s.
	Water,	q. s.
	Bicarbonate of potassa,	40 grs.
	Syr. of citric acid,	f℥ jss.

Dissolve 240 grains of the acid in four fluidounces of the water at a heat below the boiling point, (about 166°;) saturate the solution with the magnesia to be used, adding gradually, putting in an excess, to insure saturation. The residue, if washed and burnt, will not give off water of combination, puff up or char, showing it to be free from any organic salt, while the opposite is frequently the case, if the full equivalent of magnesia be added all at once, or the solution made at too high a temperature.

We now have a salt composed of exactly three equivalents of base and one of acid; to reduce this to an acid salt of the combination $2MgO, HO, C_{12}, H_5, O_{11}$, we add one-half an equivalent of acid, which, in this case, is 120 grains, giving three equivalents of base and one and one-half of acid in combination. This solution, upon evaporation to the consistence of a syrupy liquid, retained its fluidity for several hours, after which it changed into a white, opaque, pasty mass, *readily soluble* again in hot water, which is not the case with the salt containing three equivalents of magnesia to one of acid. This would indicate that the former salt would remain in solution much longer than the latter.

A precipitate was formed in a weak solution of the perfectly neutral salt in less than twenty-four hours after cooling.

To impregnate the solution with sufficient carbonic acid, we take, in addition to the above quantities, the remaining twenty-seven grains of citric acid, and forty grains of bicarbonate of potassa. We prefer this salt of potassa, from which to obtain the carbonic acid, to the carbonate of magnesia, on account of the large amount of foreign matter that is almost always contained in the latter, when prepared in large quantities, and, being set free, makes the solution more or less cloudy, according to the quality of the carbonate of magnesia used.

This solution, when finished, should contain of the salt, $2MgO, HO, C_{12}, H_5, O_{11}$, about 383 grains, by the following equation:—201 : 214 : : 360 : $383\frac{57}{67}$. I believe the Pharmacopœia aims at a solution to contain 480 grains of the salt in each bottle made by the officinal formula, but experience has shown the solution, as above made, to be quite strong enough.

It is about the same strength as that produced by the formula given in the third edition of Parrish's Pharmacy, which solution has been used as a hydragogue cathartic with succes for many years, and is believed to be the one in most general use at the present day.

I have examined a sample, as made by a House in this city, and sold very largely, and found it to be of nearly the same strength as above.

ON THE MODE OF MANUFACTURING SUGAR-COATED PILLS AND GRANULES.

By Henry C. Archibald.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

The manufacture of sugar-coated pills and granules having of late become a source of great profit and trade to the apothecary, the mode of manufacturing them being kept secret, and the views advanced by some of our leading pharmaceutists being wholly inadmissible in preparing them, I have, from long practical experience in their manufacture, determined to make it a subject for an essay. In order to make a pill that shall medicinally come up to the standard of the U. S. Pharmacopœia in therapeutic effects, the greatest care requisite in their manufacture is in the selection of the drugs that enter into their composition; for that purpose it is advisable, when you manufacture them largely, to buy the crude drugs, and from them prepare extracts, powders, &c., so as to insure the reliability of the pills, and to keep up for them the reputation they so richly deserve if properly prepared.

The first step in the process of manufacturing pills is essentially as follows: Sufficient mass is made up at one time to be capable of being divided into 2000 pills, great care being observed to have it of sufficient hardness and tenacity to insure the pills after formation against indentation by pressure and crumbling into irregular pieces; after which the mass is rolled between two boards, the upper with teeth inserted for cutting the mass, the bottom one having a guage attached to the sides so as to regulate the sides to suit the mass to be sub-

divided previous to rolling them out into pills, and, further, to insure accuracy, each subdivided piece of mass is carefully weighed on well balanced scales, thereby preventing the possibility of any pill being larger than another. The pills are then cut by machinery suited to the size of the pill, and as they are formed roll into large shallow trays filled with some inert powder, which acts not only as an absorbent of the moisture in the pill, but prevents them, while drying, from becoming irregular and losing their shape. I would state that the trays vary in size and are capable of holding from 7 to 20,000 pills when spread evenly over the surface. When filled, the trays are removed and kept in a heated room, the temperature of which is regulated as nearly as possible to from 80 to 90° F.; when of sufficient hardness they are separated from the powder by sifting, and a coating of a solution of warm gelatine is placed over them, and, when thoroughly diffused over the pills, some inert powder is thrown over them, to prevent their adhering together. After the gelatine has thoroughly fixed itself upon the pills, they are thrown into a large circular copper pan, suspended over a fire by means of chains attached to the ceiling, and a thick syrup, made in the proportion of 2 lb av. of sugar to ℥xii. of water, is added successively with constant attention until dry, and so on until the pills assume a neat and regular appearance. The time it takes to coat pills properly varies much according to their nature; those composed of resins which become soft by heat it takes a longer time, from the fact that you have to lower the temperature of the fire, and consequently a longer time is required to drive off the water in the syrup; but, from experience, I can safely say that the average time consumed to coat properly a batch of 7,000 pills is from 9 to 10 hours. As thus prepared the sugar crystallizes regularly upon the pill and presents to the eye not only a uniform but a smooth appearance; they are entirely soluble and will keep for an indefinite period without becoming hard, and consequently more or less insoluble in the gastric juices of the stomach. I present herewith some compound cathartic pills, together with granules of morphia made and coated by the above process, and have been on hand about four months.

Granules are made upon the same principle, by incorporating the alkaloids or salts with some inert powder and gum arabic for its adhesiveness, and are dried and coated in the same way. I could still further enlarge upon the above process, but my sole aim is to present in as brief a manner as possible only the chief points in their mode of manufacture.

AROMATIC SULPHURIC ACID.

By Thomas N. Jamieson.

This preparation, made according to the formula as revised in the last edition of the U. S. Pharmacopœia, is still rather inelegant, owing to the copious sediment deposited by the action of the sulphuric acid on the aromatics, more especially the cinnamon, as observed by experiments. Suspecting that the quality of materials used might have something to do with causing the precipitate, two experimental lots were made, one by using pure Ceylon cinnamon, the other with cassiæ lignea, or commercial cassia, and after allowing them to stand for two months, found that the precipitate was almost as copious in one as the other. The tinctures of cinnamon and ginger were then treated with the acid separately, to ascertain which it is that causes the sediment, and I find that, while there is a slight precipitate in the ginger, there is a very large amount in the cinnamon. It then occurred to me that, by substituting oil of cinnamon or cassia for the bark, the precipitate might be avoided, and futhermore, that this preparation might be made extemporaneously by using officinal tincture of ginger and the oil of cassia, instead of the present method of first making a tincture of the aromatics. The preparation made according to the following suggested formula will be found to have all the characteristic properties of the officinal preparation except in color, which is of a light straw:

Formula.

Take of	Oil Cinnamon or Cassia,	Twelve minims.
	Tinct. Ginger,	Two fluid-ounces.
	Alcohol,	Twenty-four fluid-ounces.
	Sulphuric acid,	Six troy-ounces.

Add the acid gradually to one-half of the alcohol, allow the liquid to cool; to the other half add the cinnamon and ginger. Mix the liquids and filter. If desirable to have the preparation of the same color as the officinal, this may be accomplished by using either santalum or cudbear, the latter being preferable from its being more permanent in an aqueous solution and of a brighter color.

Chicago, Ill., March, 1867.

REMARKS ON "OSHA" AND "YERBA MANSA" OF NEW MEXICO.

By Jacob Krummeck, (with a Note by the Editor.)

A few months since the Editor received a package of roots from Mr. Jacob Krummeck, pharmaceutist, of Santa Fé, New Mexico, directed to him as Corresponding Secretary of the Philadelphia College of Pharmacy, accompanied by the following letter:—

"*Santa Fé, New Mexico, Oct.* 14, 1866.

"Dear Sir:—This will be handed to you by Dr. William R. Cruice, of the military service in this Territory. I think you will find them an interesting subject for study. One is the root of a plant called by the Indians 'Osha,' and in my opinion is a remote species of Angelica. This plant grows around springs of fresh water high up in the mountains, in small, low bushes; has a small oval leaf, and a bluish-white flower, which emits a fine aroma, similar to that of vanilla; the leaf and stem are odorless.

"This root is extensively used in Indian medicine, in bronchitic affections, asthma, coughs, etc. The Indians usually chew the root and swallow the juice; sometimes, however, they boil it in water, together with a species of sugar cane which grows here wild. In this latter form they use it in most all diseases of the lungs.

"I have tried its effects on myself, being afflicted with asthma, and have experienced considerable relief from it. I also gave it to an old gentleman in a case of severe chronic cough, and with success. In this case I prepared a syrup as follows: one ounce

of the root, with one pint of water and half a pound of sugar, boiled down to twelve fluid-ounces and strained. Dose, a teaspoonful whenever the cough is troublesome.

"Also in females, of the ages of 17 and 43 respectively, in serious lung affections it proved effective, in the form of syrup, with a grain of morphia added to half a pint of the syrup.

"An ethereal oil is gained by pressing the root.

"Another plant, similar to this in size and shape, bloom and odor, is found along the banks of rivers; but this plant is a strong poison. I tried its effects on a dog, and it proved as powerful as strychnia. I should have sent some, but have been unable to procure it, the Indians having a strong dislike and wholesome fear of it. I will, however, in a short time get some and send it.

"The second root is that of 'Yerba mansa,' (mild herb). This plant grows in marshy bottoms, low and close to the ground, has hardly any stem, oblong leaf, and small yellow-spotted flowers, entirely odorless. The root is gathered in autumn, when the flower has disappeared and the leaf is yellow. This root when dry has, as you will find, the odor of allspice.

"The natives, both Indians and Mexicans, use it in cases of chronic diarrhœa by making a strong tea of it, which is taken hot.

"I have used it with success on adults in cases of that disease, making a tea with an ounce of the root and a pint of boiling water, giving a teacupful, hot, every three hours, and at the same time, to give relief to dryness of the throat, I gave an infusion of one ounce in two pints of water, with an ounce of sugar, cold.

"The same course pursued with children in severe cases of dysentery, where injections and other medicines failed, proved effective in arresting the disease at once.

"I shall continue to forward similar specimens of herbs and plants to you, if agreeable.

"Very respectfully, your obd't. servant,

"JACOB KRUMMECK.

"P. S.—I am sorry to be unable to send you the whole plant—leaf, flower, and stem,—the season being too far advanced; I will send it next season. J. K."

NOTE BY THE EDITOR.—The root called "osha" is in pieces of various sizes, from a line to an inch in thickness, and from two to twelve inches long, covered, except where broken, by a dark brown epidermis, enclosing a whitish or yellowish-white fibrous interior structure. The large roots consist of the caudex, with the projecting bases of the annual stalks about half an inch in diameter, with the remains of the stem fibres. In the best preserved specimen the tap root is about a foot long, with numerous lateral roots emanating from various portions of the main root, and varying in size, in this respect much like parsley root. At the top of the root, especially about the bases of the stalks, hair-like fibres are numerously attached. The roots are all more or less crushed, as though twisted, by which the epidermis is broken, and the interior fibrous structure exposed. The taste of the root is aromatic and acrid when chewed, like calamus, though different in flavor. When examined closely with a lens the root has a greasy, oily aspect, and by mere handling communicates its odor, which is quite persistent, and not disagreeable, reminding one of Angelica, and due to a large proportion of volatile oil. This was determined by placing 100 grains of the root, reduced to coarse powder, in a pint flask with four ounces of water, adapting a glass Liebig's condensing tube to the flask, and distilling one-half; a milky distillate was obtained, upon which numerous globules of a nearly colorless, strongly odorous, volatile oil floated. This oil has an aromatic, pungent taste. Sulphuric acid destroys it, producing a red substance with an odor like wormseed; it is readily soluble in alcohol and ether. The only specimen of oil of Angelica I had, with which to compare it, was too old and altered to afford a comparison; what evidence it yielded was not in opposition to their close analogy.

Ether percolated through the powdered root and evaporated, yielded a brown fluid consisting almost wholly of violatile and fixed oil amounting to 30 per cent. of the root.

Yerba mansa root consists of a rough cylindrical rhizome or caudex, about an inch long, and three to six lines thick, from which issue a number of spongy, cylindrical, almost fibrous roots, very brittle, and of a fawn color. Its odor in quantity is rather aromatic, its taste pungent and biting, but not very much

so. The structure of the root is but slightly fibrous, a cross section exhibiting the cellular open structure of water plants. Some of the roots have remains of the narrow leaf stalk, but no leaves could be found. The top of the rhizome has a purplish color in many of the specimens, and exhibits the attachments of the leaves; the plant is evidently perennial, and the age may be comparatively indicated by the length of the rhizome. When the latter is broken transversely it exhibits a yellowish ring of what appear to be longitudinal fibres, but on closer examination have not a fibrous structure. A single seed vessel was found.

A decoction of the *mansa* root is colored greenish-black by chloride of iron; the decoction has no acid reaction. The filtered liquid is precipitated abundantly by sub-acetate of lead, and the presence of gummy matter in the root is evinced by its consistence when boiled. Nevertheless, the root is not very astringent, and must owe its virtues in dysentery to other ingredients than tannin. The tincture in alcohol ·816 is brownish-yellow, and when added to water an opalescent liquid is produced which is strongly fluorescent. As the author promises the plants, it will be time enough to push the investigation of the properties of these roots when their identity is finally determined, but knowing that my friend Elias Durand was well acquainted with the botany of that region, and might be able to get a clue to the plants from their roots, I submitted them to him and elicited the following reply:

"My Dear Procter:—It is almost impossible to designate a plant from the roots only, unless very peculiarly characterized. I will, however, hazard an opinion upon the two which you have submitted to me.

"*Yerba mansa:*—A spicate fleshy fruit, with its floral envelopes at the base mixed up with the roots; somewhat resembles that of the *Anamopsis californica*, Nuttall, in Tayl. Ann. Nat. History, (which I have not to compare the character of the fruit.) The floral envelopes at the base of the fruit; the fleshy roots with fusiform rootlets, are also very much like those of the *A. californica*, and the flowers are yellow, like those of that plant.

"If the roots of Osha belong really to the order *Umbelliferæ*, it must be to the subclasses *Mulineæ* or *Sarriculeæ*, which have

simple leaves, whilst all the other subclasses have, with few exceptions, compound leaves. Admitting this supposition, I would not be surprised that the plant be an *Eryngium*, an aquatic and subaquatic genus, with white, bluish and blue flowers; with, sometimes, fusiform or tuberous roots, and aromatic or strong-scented flowers and, perhaps, roots, such as *E. aromaticum* of Florida; *E. odoratum* of Portugal, and *E. fœtidum* of the West Indies and South America. E. DURAND."

The genera Angelia and Eryngium are allied in the same natural order, and the Eryngium aquaticum, or button snake root, was long in the secondary list of our Pharmacopœia, and has medical properties analogous to those of "Osha." In regard to "Yerba Mansa" there is strong reason to believe that Mr. Durand's opinion, founded on a seed vessel, will prove correct.

NOTE ON LOZENGE CUTTING.

Philadelphia, March 7th, 1867.

MR. EDITOR:

Sir,—In a recent issue you notice that some of the patrons of the *Journal* complain that it is getting more scientific than practical. I do not think it too scientific myself, yet at the risk of the reverse, that of being more practical than scientific, I offer, if acceptable, the following:

In compounding and dispensing lozenges extemporaneously, as ordered in perscription, &c., where it is desirable to secure neatness in addition to the equal subdivision of a given mass, I have found the following plan to work well: I use a thin brass cylinder of half-inch or more internal diameter, and about two inches long, having a cylindrical piece of hard wood closely fitting the interior, with one end smoothly finished, to coincide with one end of the cylinder, and the other end terminating in a handle. Divide the mass in the usual manner as for pills, then partially withdraw the handle, place the open end of the cylinder over the pill on the tile or counter, hold firmly and press down the handle sufficiently to give the mass the desired form, after which it can readily be removed by slight pressure on the handle. It would be well to have two or more of different sizes.

Yours respectfully,

W. L. TURNER

PHARMACOPŒIA HELVETICA. SCAPHUSIÆ EX OFFICINA BRODTMANNIANA, CHR. FR. STOETZNER; 1865.

The Swiss Apothecaries' Association was instituted in 1845. As early as 1848 it advocated the introduction of a Swiss Pharmacopœia, to take the place of the numerous pharmacopœias and dispensatories, partly from foreign countries, which were used in the different cantons. The Association finally took the matter in hand, and appointed a committee, who, after five or six years' labor, produced a work which appeared in print under the above title.

The work is printed in large octavo, on good paper, with clear type, the officinal names and the materials used for the preparations with prominent letters, and altogether presents an excellent appearance, creditable at once to its authors and publisher. The language adopted is the Latin, this being the more necessary since three different languages are spoken in different parts of Switzerland; for the same reason, each officinal name is followed by its synonyms in the German, French and Italian languages.

In its general character the work resembles the pharmacopœias of Germany, there being no classification of the material,—all being arranged in alphabetical order, not in groups, as in our pharmacopœia. An enumeration and description of the simple drugs, however, is not contained therein; the text of 278 pages consists of directions for preparing the officinal pharmaceuticals and chemicals, together with a short description of their properties and the reactions of their purity; no process is given for most chemicals which are best and cheapest prepared on the large scale; but either absolute purity or a certain standard quality is required, to be ascertained by tests.

The text is followed by a table occupying five pages, giving the solubility of various acids, salts, alkaloids and other principles, in water, alcohol and ether, at the normal temperature of 17° C., and at or near the boiling point of the solvent. Included in this table we also find a number of compounds which are not enumerated among or used in obtaining the preparations: we mention atropia, cantharidin, caffeina, digitalin, mannit, and a few inorganic salts.

Table II. is a comparison of the degrees of Gay-Lussac's alcoholometer with those of Baumé's and Beck's hydrometers for liquids lighter than water, also of Richter's and Tralles' scale. The first column contains the degrees from 0 to 100; the second, third and fourth columns have reference to Gay-Lussac's alcoholometer, giving the specific gravity and the weight of alcohol and water corresponding with the respective degrees, which, as is well known, express the percentage by measure; the fifth and sixth columns give the specific gravity for the corresponding figures on Baumé's and on Beck's scales, both expressed in three decimals, and the former nearly identical with Pemberton's observations; the two last columns compare the degrees of Richter's with those of Tralles' alcoholometer.

A comparison of the French decimal weight with the Swiss apothecaries' weight, and *vice versa*, is contained in the third table, which is very complete, and useful for converting any given weight, into its correct value of the other system, by simple addition. We learn there that a Swiss pound civil weight is equal to 500 grammes, the medicinal pound = ℥xij = 375 grammes, ℥j = 31·25 grm., 1 gramme = 15·36 grains.

The hydrometers of Baumé and Beck for liquids heavier than water are compared on the fourth table; the scale of the former in three decimals corresponds more closely with that published in Duncan's Edinburgh Dispensatory, 1830.

The fifth table, in two parts, contains a comparison of the Swiss and French measures of length.

1 line . . .	=	·003 metres.
10 lines = 1 inch . .	=	·030 "
10 inches = 1 foot . .	=	·300 "
10 feet . . .	=	3·000 "

The sixth table enumerates the poisonous and strong-acting (*heroic*) medicines, in the keeping and dispensing of which the greatest caution is to be observed. It gives in grains and grammes the largest single doses, and also the maximum quantities administered (to adults) in twenty-four hours, which, when exceeded, the physician is required to underline and accompany with this mark (!), without which the pharmacist is not justified

to put up the prescription. The values in the two columns can only be approximate, but since the Swiss pound is equivalent to one-half kilogramme, the discrepancies in the different values ought to be quite insignificant. Taken as a whole the table is correct, but a few discrepancies occur which are too great; we notice the following: Aconitia, maximum single dose $\frac{1}{8}$ gr. = ·008 instead of ·007 grm.,—a difference of over 12 per cent.; atropia, single dose $\frac{1}{10}$ gr. = ·0016, not ·001 grm.,—difference over 50 per cent. Evident mistakes are the following: Acidum arseniosum, $\frac{1}{12}$ (not $\frac{1}{2}$) grain = ·005 grm.; veratria, $\frac{1}{4}$ grain = ·015 (not ·005) grm.; zinci chloridum, $\frac{1}{4}$ grain = ·015 (not ·005) grm.

Following the tables we have one general index of Latin, German, French and Italian names, including the synonyms; and the whole concludes with a list of thirty-five "corrigenda," mostly typical errors, in which, however, those just mentioned are not included..

The European pharmacopœias in general originated with the governments, and are from time to time revised by boards appointed by the same. The origin of the Swiss pharmacopœia is similar to our own, except that the initiatory steps were taken and the work completed entirely by pharmacists. It is therefore truly republican in its nature, being the pharmacial law-book made by those who are to be governed by it.

It will be interesting to American pharmacists to know something of the preparations and processes adopted by our republican brethren in Europe, and we propose to review the more important ones, and compare them with similar ones in our own pharmacopœia; we shall look first at the strictly chemical preparations, and afterwards consider the pharmaceuticals.

It may be remarked here, that all quantities given are meant for weight; the British and American Pharmacopœias, I believe, are the only ones which order the liquids by measure. This rule, however, has been departed from in ordering fixed oils, oleoresins, acids, &c., in the last edition of our own. In directing quantities in *parts* (rarely ounces or grains, and then the equivalent in grammes is always given), the Swiss Pharmacopœia has followed the commendable example of other continental

Pharmacopœias, and thereby adapts itself at once to all parts of Switzerland, in some sections of which the old apothecaries' weight is used, while in others the gramme is employed, perhaps exclusively. The advantage of this is very obvious. We cannot now make preparations according to the British Pharmacopœia, nor are our friends in Great Britain able to make preparations of our Pharmacopœia, in which liquids are employed, without going to the trouble of calculating the weights and measures. But the direction of *all* quantities in *parts by weight* enables us to produce exactly the same preparations, whether we work with grammes, troy, avoirdupois, Nuremberg, or any other system of weights.

Acidum aceticum* has a specific gravity of 1·040 at 15° C.; the dilute acetic acid is made with one part of the former and five of distilled water.

Acidum hydrochloricum and nitricum are distilled from table salt and purified saltpetre respectively, with crude sulphuric acid. These pure acids have the spec. grav. = 1·120 and 1·20, of the dilute acids = 1·06 and 1·09; besides these, the crude acids are likewise officinal.

Acidum sulfuricum is made by rectifying the crude acids from a bath of ashes; it is free from bases, and from muriatic and nitric acids.

Dilute sulphuric acid has 1·11 spec. grav. The crude acid, diluted with ten parts of water, may yield a slight precipitate with sulphuretted hydrogen ("hydrosulfur," a short and very appropriate name), but if this is wholly or in part dissolved by ammonia, and this solution precipitated in yellow flocks by muriatic acid (arsenic), the acid is unfit for use.

Acidum phosphoricum, spec. grav. 1·130, is made in glass retorts; after the phosphorus has been oxidized and the nitric acid entirely expelled, the arsenic likely to be present is removed by sulphuretted hydrogen. Our Pharmacopœia has no such provision, and does not even direct the phosphorus to be free from this frequent impurity.

Acidum hydrocyanicum contains two per cent. by weight; the

* We give the names of all preparations as officinal in the Swiss Pharmacopœia.

distillate from two parts ferrocyanide of potassium is collected in eight parts alcohol, and subsequently diluted with distilled water; the drops of this acid are, therefore, rather smaller than of our preparation.

Æther is purchased from chemical manufactories and rectified. The danger connected therewith is not as great as to prepare it in glass retorts, which our Pharmacopœia directs and which nobody follows.

Æther aceticus. Four parts exsiccated acetate of soda, four crude sulphuric acid and three alcohol, are distilled to obtain four parts, which are agitated with the same weight of water and sufficient carbonate of magnesia; the ether is then separated by adding two parts chloride of sodium, and rectified.

Alcohol absolutus, spec. grav. 81 at 15° C., is scarcely stronger than our alcohol fortius ·817.

Alumen ustum. Five parts alum are heated until three parts remain; this is not entirely exsiccated,—sixteen to nine parts is better, as directed by the U. S. P.

Ammonium chloratum is sal ammoniac purified by recrystallization, with the addition of ammonia to remove iron. The purified salt only ought to be dispensed for internal use; our Pharmacopœia knows the crude only, notwithstanding its frequent use as an expectorant.

Ammonium chloratum ferratum consists of twelve parts sal ammoniac and one crystallized sesqui-chloride of iron, dissolved and evaporated.

Aqua chlori is prepared by absorbing the gas in its passage through several flasks half filled with water; the uncondensed chlorine is passed into a solution of protochloride of iron; one ounce contains about three grains chlorine, and oxidizes twenty grains protosulphate of iron.

Argentum nitricum is made from pure silver and acid, the solution filtered through gun cotton, and the crystals heated in a porcelain capsule short of fusion, to expel the excess of nitric acid. We doubt the possibility of ever getting rid of all this excess in the directed way, because the crystals retain some mother liquor mechanically enclosed, which cannot be removed except by fusion. It would have been much better to granulate the

salt, continue the heat until the excess of acid is expelled, and, if preferred in crystallized form, re-dissolve in distilled water and crystallize. The process of our own Pharmacopœia will yield a pure salt without loss of silver, if the latter is used in a nearly pure state, the nitrate of other metals which are likely to be present being decomposed by fusion; but the filtration through paper of the solution of the pure salt is objectionable, since the resulting crystals will be very easily blackened on exposure; powdered glass or gun cotton ought to be substituted. Our Pharmacopœia is, moreover, inconsistent in directing absolutely pure metallic silver and nitric acid, and assuming the presence of other metals in preparing the nitrate.

(To be continued.)

ON THE KINDS OF RHUBARB AT PRESENT IN RUSSIAN COMMERCE.

By Adolph Fero, of Moscow.

The supply of rhubarb is at present a most important question to the Russian apothecary. After having been compelled for centuries to fill our wants from the magazines of the government, and there obtaining only the best quality, the so-called *Radix Rhei Moscovitici*, brought by Bucharian merchants to Kiachta and there examined and bartered by the crown, we see, for several years past, this traffic cut off, the supplies of the government completely exhausted and yet no prospect for re-establishing that trade.

Although the prohibition to obtain rhubarb from foreign countries has not been rescinded,* this measure will sooner or later become imperative, and the question will then arise, what new kinds of rhubarb may be obtainable by us and what is their comparative value, and how do they compare with the crown rhubarb, as formerly obtained?

Having been ordered by the government to Kiachta and employed there as pharmacist at the inspecting office for rhubarb, I had frequent occasion to study the conditions of the trade in rhubarb and to examine the kinds received. Since that time my

* Apothecaries must even now obtain rhubarb from other sources.

interest in this subject has been kept alive, and this is my motive for entering more minutely into this subject. Through the want of crown rhubarb, several kinds have lately appeared in our commerce which are either entirely new or at least do not correspond with the older samples which had received their names outside of Russia. This latter is especially the case with *Radix Rhei Bucharici*, under which name the works on pharmacognosy embrace drugs differing very materially from each other.

For comparing the different kinds of commerce, the so-called crown rhubarb (Kronrhabarber) may be used as the basis because it was obtained from the first hands,* was accepted only when possessing certain qualities, had been kept and transported with the utmost care, and because medical authorities regarded it as the most effective. The following is contained in the instructions which I received:

"In accepting rhubarb from the Bucharians, it must be strictly observed that it possesses all the requisite qualities for medicinal purposes; large, well-selected and recently collected roots only must be accepted. Accidental or intentional admixtures of other kinds of rhubarb must be carefully picked out. The cuttings of worm-eaten, spongy or rotten spots and all other offal obtained in cleaning rhubarb, must, according to the contract with the Chinese government, be burned in presence of the Bucharians."

Unfortunately we have still no knowledge of the true source of this rhubarb, chiefly because the Bucharians could by no means be induced to furnish dried specimens of the plant, or even roots entirely unpeeled or uncleaned.

What I could learn from them in regard to collection, locality and growth, does not reach beyond the accounts of von Schröders, contained in his historical essay on the rhubarb trade in Russia, (Pharmac. Zeitschr. f. Russl. ii., No. 21, 22.) (See also Hallier's Beiträge zur Geschichte des Rhabarber in Arch. d. Pharm. cxii., p. 67.) I will merely point out those facts which are important in establishing the principal kinds, to which I may still count the Moscovitic rhubarb as the starting point of my examinations.

* The Chinese government had given the Bucharians the exclusive monopoly for the sale of this rhubarb.

Schröders states that the trade of the Russian government with rhubarb was organized between 1687 and 1698; in the latter year it was decreed to purchase for the government exclusively all rhubarb brought by caravans of Bucharian merchants to the Russian frontier. After the diplomatic relations between Russia and China had become more intimate, the latter government favored this trade by making the exclusive monopoly of the Bucharians to sell the true rhubarb conditional, compelling them to sell this root *only* to the Russian government. Subsequently this trade was regulated by contract. The Bucharians could supply the demand only in very rare cases, and the concession made in later years by the Russian government that, after satisfying the wants of the crown, any excess might be disposed of, after the usual inspection, to private parties, was rarely if ever carried out as far as the Moscovitic rhubarb is concerned.

This fact of the incapability of obtaining a sufficient supply through the Bucharians, induced the Russian government to search for other sources in the accessible parts of China and to experiment with the culture of rhubarb upon Russian soil; in this manner a trade was once opened at other points on the frontier of China and for some time even rhubarb grown in Siberia was employed.

Travellers have never penetrated to the southern slope of Thibet, and it is therefore improbable that the rhubarb, directly or indirectly obtained from them, was from the true place. The importation of rhubarb still continues and furnishes one of those kinds which will hereafter be described.

During the present century the commercial intercourse between China and England, via the East Indies, has assumed a continually increased importance, and the commerce of nearly all Europe now draws its supply of Chinese products via England, among them rhubarb. In regard to the locality where the rhubarb exported from Canton is cultivated, the southern provinces are pointed out, which are accessible to explorations from the East Indies in the same manner as the Russians established connections in the North. But since the English have never penetrated to the rhubarb districts pointed out before, and since the Bucharians roaming through that country do not come to

the English at the borders of the East Indies, the latter, like Russia now, do not obtain their rhubarb from those districts.

Of late years a continually increasing trade in rhubarb has sprung up from Bucharia to Russia, the root being probably brought by Tartarian merchants to the Caspian Sea and from thence up the Wolga to the fair at Nishni-Nowgorod; but nothing definite could be ascertained, notwithstanding the most diligent inquiries. From Nishni-Nowgorod this rhubarb is transported, chiefly by Jews, partly to Moscow and St. Petersburg, for the greatest part to White-Russia and Poland, even to Galicia and occasionally to Vienna.

As observed before, the descriptions of this root as given by Grassmann, Pereira and others agree very little amongst themselves and with the present commercial kind; its appearance, however, is sufficient to refute the assumption that it was grown in the same soil as the true Moscovitic; and, indeed, the information which we are enabled to obtain here in Russia points to its cultivation in Bucharia.

Above, I believe, I have given the points which would suggest a ready nomenclature for the commercial varieties of rhubarb root. Starting from the view that the former Russian crown rhubarb grows in a rather confined locality, accessible only to the Bucharians, and that its importation has entirely ceased, I propose to retain for it the name of MOSCOVITIC or *crown rhubarb*, by which it has been known for a long time. The name of *North-Chinese rhubarb* is proposed for the rhubarb which is exported from other parts of China northwardly to Siberia. (The term "Siberian rhubarb" ought to be retained for that root which was for some time cultivated in Siberia.) *South-Chinese* or *Canton rhubarb* would then be applied to what is exported by way of the East Indies, and the root which comes from Bucharia to the Caspian Sea and to Nishni-Nowgorod would have to be called *Bucharian rhubarb*. This latter term would have to be discarded as synonymous with Moscovitic rhubarb, in which connection it was formerly sometimes used, because the true crown rhubarb was obtained through Bucharian merchants.

The following contains the characteristics of these different kinds:

1. *Moscovitic Rhubarb.**—Caudex from 9 ounces to 6 drachms, packed in chests of 200 lbs. each; partly entire, or divided into two halves by one longitudinal or transverse cut, or rarely the larger roots divided into four parts by one length and one cross-cut, this latter at one time highly valued in England under the name of hoof rhubarb. Color on the surface purely ochre yellow. They are mostly perforated by a hole frequently containing traces of the rope by which they were suspended while drying; most pieces are penetrated to about the centre by what is called a borehole made by the examiner with a knife for the purpose of examining the roots for bad spots. The roots are entirely peeled and free from bark and cambium. The surface is smooth and covered with an extremely fine powder, evidently from the attrition of the dried pieces during transportation. The average size of the uncut roots is 6 inches in length and 2¼ inches greatest thickness; their shape is oblong-oval. The texture is compact, the so-called pulverulent ring (of Berg) is little or not observable; inside and outside of the same, the several radiating circles are regularly formed, often several such systems running together; the medullary rays are usually present in more than two rows beside and above each other and the veins interlacing each other on the surface in distinct rhombic forms.

The cells are roundish oval, tinged with a brownish red, yellowish red, greyish brown or bluish grey coloring matter, which is readily soluble in water, less and more slowly in glycerin. In specimens richest in oxalate of lime, the amount of starch is very insignificant in the centre, somewhat larger toward the circumference. The clusters of oxalate of lime are radiating. Intermixed are found a small number of pieces approaching the North- and South-Chinese rhubarb.

2. *North-Chinese Rhubarb* comes to Russia by several routes,

* *Russian* or *Turkey rhubarb* is the synonymous term for this kind in the United States. Most rhubarbs, however, formerly sold in our markets under this name, at least as far as I had occasion to see and examine, were base imitations, some consisting of selected, occasionally even common Chinese rhubarb, at other times, in my judgment, merely of English rhubarb. The same is true of what is even now still offered here, after Russian Rhubarb has for several years disappeared from European commerce and is rarely met with except in collections. J. M. M.

chiefly through Siberia to the fair at Nishni-Nowgorod, since 1863 imported to Moscow by the firm of Kaplan & Co. Packed in chests and barrels up to 200 lbs. in weight.

Pieces weighing from one to seven ounces, mostly uncut, or cleft merely longitudinally; shape resembling the Moscovitic. Entirely or partly mundified, but the latter peeled superficially after drying. Nearly all with holes made on drying, but rarely bore-holes, and these made only in imitation of the Moscovitic root. Color the same as in former. Surface mostly smooth, frequently bearing evidence that the powder was not fixed by attrition during transportation, but added artificially. Mean length 2¾ inches, greatest thickness 1¾ inches. Texture more or less loose, frequently porous; pulverulent ring strongly marked; radiating circles indistinct, within the ring these radiating systems are very rarely circularly arranged, outside the ring still more rarely indicated; but here the medullary rays radiate very uniformly; these rays formed mostly of five rows of cells beside, and of five and more rows above each other; the interlacing of the veins on the surface is therefore far less distinctly rhombic. Cells of medullary rays elongated, rectangular, their coloring matter mostly yellowish or reddish brown. Starch in the centre and toward the circumference more abundant, oxalate of lime in smaller quantity; clusters of the same flat radiating.

3. *South-Chinese Rhubarb* enters commerce usually from Canton in chests of 130 lbs., (147½ lbs. Russ.,) lined with tinned sheet-iron. Partly peeled, partly unpeeled, mostly uncleft, with very small bore-hole, frequently wanting and not made with a knife as was done at Kiachta. Surface generally covered with little powder. Mean weight 3 oz.; larger pieces as much as 7 oz., smaller about 1 oz. Mean length 3 inches, greatest thickness 2⅓ inches. More compact than former and rarely porous. Color darker, externally as well as inside. Microscopic texture and appearance under the magnifier similar to former, but more compact, the veins darker to greyish brown. Starch granules in some specimens smaller than in former.

I do not consider here the rarer and inferior kinds, particularly the so-called cylindrical Canton rhubarb (stick rhubarb), which appears to be cultivated in the East Indies, probably a kind of

rhapontic root, nor the so-called red Canton rhubarb, which does not appear ever to become an important commercial variety.

4. *Bucharian Rhubarb.*—Besides the facts related above nothing can be stated regarding the manner in which it enters commerce, since it is mostly offered in small quantities and by pedlers; but all its qualities characterize it pretty well. From the desire to impart to it a resemblance to the Moscovitic rhubarb, the perforations for suspending the root while drying are met with, and also frequently imitations of the bore-holes, the former being in many instances made after drying. We have mundified and so-called half mundified kinds, the former frequently liberated from the cambium very carefully, and at the same time most economically, often by means of a file; the latter after drying usually not further treated with the knife and therefore with numerous longitudinal wrinkles on the surface. In most cases the dimensions of the roots are greater than in the preceding kinds, and they are cleft longitudinally into two halves; the exposed cut having contracted, on drying, to a somewhat convex (concave?) shape, this might be called the conchoidal form of rhubarb. Mean length $3\frac{1}{2}$ inches, width $2\frac{1}{2}$, thickness $1\frac{1}{4}$ inches; mean weight of a whole root 8 oz. The surface is usually intentionally sprinkled with powdered rhubarb, sometimes also with other yellow powders, like turmeric; sometimes it may be observed that the specimens have been previously wetted to make the powder adhere better.

In compactness this rhubarb resembles the South-Chinese; its texture is the most fibrous and woody of all varieties. The shape of the cells of the medullary rays and of the clusters of oxalate of lime resembles that of the North and South Chinese rhubarbs; the starch granules show no important difference from those of the Moscovitic rhubarb, with which it also agrees in the indication of several radiating circles within the pulverulent ring, which, however, is more marked. These radiating systems are wanting outside of the ring like in the Chinese, and the medullary rays radiate very accurately, becoming gradually narrower towards the circumference, and their color is in most cases darker than in the South Chinese Rhubarb.—*Pharmaceut. Zeitschr. für Russland*, 1866, *Novb.* 473—481. J. M. M.

GLEANINGS.

By the Editor.

On Oil of Sesame.—M. Fluckiger (*Schweitzer, Woch. f. Pharm.*) has made an examination of the seed yielding this oil (sesamum orientale) which has been introduced into the Swiss Pharmacopœia.

Deprived of its perisperm the seed appears to be saturated with oil; on removing this with ether, the residue consists of proteic granules that are colored yellow by iodine, dissolved by hot potassa, and are colored violet by Barreswill's liquid.

They contain also 38 per cent. of gum soluble in water, and when the seed are beaten with water they form an emulsion which is acrid when old seed are used.

The seed lose 4½ per cent when dried in the air, and give 6 per cent. of ashes, containing traces of phosphoric acid. The black seed give 8 per cent. of ashes; further, the yellow seed contain 3 per cent. of nitrogen and 56 per cent. of oil.

Oil of sesame is not a drying oil. Its specific gravity ·919 at 55 Fahr., and congeals at 21° Fahr.

The author says, this, like apricot oil, is used to adulterate the oils of olive and almonds. It is detected by Behren's reagent, (equal parts of sulphuric and nitric acids), which by contact produces a green coloration with pure oil of sesame, reddens ground nut oil, and only yellow pure olive oil. The observation must be made immediately on contact.—*Jour. de Pharm. Feb.*, 1867.

Bleaching Gum.—M. Picciotto recommends to dissolve the gum, 6 parts in 15 of water, strain through linen, and add recently precipitated gelatinized alumina; it forms a thick pap. The coloring matter is fixed by the alumina so completely that when the mixture is thrown on a strainer the mucilage escapes colorless, and is then carefully evaporated.

Hyoscyamia.—The Druggists' Circular for March states, without giving its authority, that the alkaloid of henbane has been obtained by Kletinsky in the form of crystals, former attempts having only succeeded in producing an amorphous resinoid body. The alkaloid is best procured from the fresh seed by digesting

them for twenty-four hours in dilute alcohol with 2 per cent. of sulphuric acid at 120° Fahr., expressing, filtering and supersaturating with caustic baryta. The precipitate is separated by a filter, the filtrate is then treated with sulphuric acid in slight excess, and distilled to recover the alcohol. The residue is then accurately neutralized with carbonate of potassa and shaken with ether, which removes the alkaloid. The ethereal extract obtained from this is made into a pulp, with 1 part of powdered clay, 1 of powdered charcoal and 2 of ivory-black, which is dried, spontaneously powdered and extracted by ether. This ethereal solution, by evaporation, leaves a white substance which is carefully fused by a moderate heat and crystallized from alcohol. From the gold salt the formula $C_{20} H_{17} NO_2$ has been calculated.

Eau de Pagliari.—M. Meyer (Bull. Soc. Pharm. Brux.) regards the manipulation of the original receipt as empyrical, which consists in boiling during six hours, in an earthen vessel, 6 drachms of benzoin in powder, 12 drachms of alum and 15 ounces of water, observing to agitate frequently, and replace the liquid as it evaporates by boiling water. The filtered liquid should be preserved in closed bottles. He proposes to modify the process, save time and improve the preparation, as follows:

Take benzoin in tears 90 grains; alcohol of 90 per cent. 225 grains, dissolve, and add water 10 fluid ounces, alum 450 grains. Mix and boil until the liquid becomes clear; filter after cooling. This liquid should be of specific gravity 6° of Baumé's hydrometer for salts.

How to select Indian Ink.—Indian ink for drawings, according to the Editor of the *Franklin Institute Journal*, is best tested in the following manner:—Rub off a portion on a porcelain surface with water to the proper consistency, then with a ruler draw a number of lines of varying thickness on a piece of drawing paper. When dry, brush over with water freely. If *good* the ink lines will keep sharp and clear, whilst poor ink will run or spread sideways. The best comes from Japan. A piece of slate is better than glass for rubbing it down to the condition fit for use.

ETHER VERSUS CHLOROFORM.

To the Editor of the Medical Record.

Sir—The death by chloroform which recently took place at Bellevue Hospital, gives a sad interest to the question of surgical anæsthesia. The repeated accidents which have occurred in May, 1866, in Berlin, June, 1866, in Philadelphia, February, 1867, in New York, have naturally enough staggered the faith of many surgeons in the great anæsthetic.

Allow me, sir, to refresh the minds of your readers with reference to the past records of chloroform. As early as 1853, Baudens acknowledged eighty deaths, and A. Forzet found eighty-five. In 1859 Barrier de Lyon ascertained that there had been above two hundred deaths. Diday collected from that date to 1864, twenty-one cases registered in England, leaving at least as many which were unrecorded. If there was another drug instrumental in the destruction of so many lives, would it not be ejected from the *materia medica?* True, the fault has been put on the impurity of the article employed; but how often has chloroform been used in case of accident, in its purity, as in the instance of Bellevue; showing that it need not borrow its toxic properties from heterogeneous substances. Hence, from 1847, the date of the beginning of the use of anæsthesia, surgeons have been divided into two classes, the chloroformists and etherists; and though the first-named had, at first, the advantage, their rivals have steadily persevered, patient and unrelenting, in their efforts to demonstrate the general efficiency and the absolute safety of ether.

In 1848, Cantu remarked that half of his chloroformized frogs died, and hardly any of his etherized ones. Sedillor admits, at the same date, that when he stops giving ether, amæsthesia may continue, but in no case become aggravated. Not so with chloroform; when discontinued after insensibility is produced, its action is continued, its symptoms may in some instances cause death. This circumstance constitutes the most marked difference between the anæsthetic rivals.

The few men who supported this view against triumphant

chloroformists found an early and eminent representative in T. E. Petrequin, chief-surgeon of the Hotel de Lyon. For nearly twenty years he has banished chloroform and used ether in that hospital, the largest in France, where from fourteen to fifteen thousand patients are treated annually, and where more operations are performed than in any other. From this telling experience, Petrequin Diday, and in fact l'Ecole de Lyon, asserts that pure ether has accomplished in their hands, without accident, those services which chloroform has rendered elsewhere at a cost of several hundred lives. Is not this question worthy of further study? Yours, etc.,

E. SEGUIN, M. D.

—*The Medical Record.*

OZONE PRODUCED BY PLANTS.

Professor Daubeny of Oxford has contributed to the Journal of the Chemical Society, for January last, an interesting article, giving the details of a series of careful experiments, which go to prove that green foliage, in assimilating carbonic acid, water, &c., liberates a part of the oxygen in the form of ozone. After his experiments were made, Dr. Daubeny found that Kosmann of Strasburg had reached the same conclusion, but through less refined experiments. Referring to the first paper he ever communicated to a scientific society, that published in the Philosophical Transactions for 1834, on the evolution of oxygen gas by plants in the day-time, Dr. Daubeny concludes: "Should I now have established to the satisfaction of the scientific world, that these same green parts of plants, at the very time they are emitting oxygen, convert a portion of it into ozone, I might hope that these researches of my later years will serve appropriately to wind up those undertaken in my younger ones, by showing that vegetable life acts as the appointed instrument for counteracting the injurious effects of the animal creation upon the air we breathe, not merely by restoring to it the oxygen which the latter had consumed, but also by removing, through the agency of the ozone it generates, those noxious effluvia which are en-

gendered by the various processes of putrefaction and decay,"—engendered, we may add, as much by decaying vegetable as by animal matter.—A. G.—*Amer. Jour. of Science and Arts, March*, 1867.

ON NATIVE CRYSTALLIZED TERPIN.

By S. W. Johnson.

In October, 1866, the writer received from Wm. M. Gabb, Esq., of the Geological Survey of California, a small quantity of crystals found in "cavities near the core of a semi-decomposed pine stump that was buried three or four feet below the surface in Shasta Co., California." The crystals were discovered by Mr. Voy of San Francisco.

At the request of Mr. Gabb I have examined these crystals, which, in the sample received, were still partly adhering to a fragment of pine, where they were associated with another crystalline substance of a yellowish color and resinous aspect.

The crystals were colorless and transparent, the largest individual was three-eighths of an inch long, one eighth of an inch wide and one-sixteenth of an inch thick. They were of brilliant lustre and well terminated at the free ends. From their occurring in buried pine wood and from their general appearance, it was at once suspected they might be identified with crystallized terpin. Their faint resinous taste and odor, not to be distinguished from that of the artificial substance, confirmed this view.

To obtain full information regarding the crystallometrical characters of the substance, I applied to my friend, Mr. John M. Blake, of New Haven, to make a comparison between the native crystals and those of artificial preparation from the chemical cabinet of the Sheffield Scientific School. Some of the highly interesting results of these investigations are communicated by Mr. Blake in the paper that follows, and leave no doubt of the identity of the two substances, although their crystals are not developed in the same manner, and exhibit other physical differ-

ences which, as he states, disappear when both are recrystallized from the same solvent.*

After Mr. Blake had finished his examinations, a combustion was made on nearly the whole available substance. The hydrogen determination was lost by the fracture of the CaCl tube, but the estimation of carbon fully confirmed the conclusions previously arrived at. The combustion was effected in a tube partly filled with oxyd of copper and in a stream of oxygen, the substance itself being placed in a tray of platinum. On application of heat it swelled and afterwards vaporized completely, without blackening and without leaving a weighable residue. On the cold parts of the tube silky crystals of anhydrous terpin condensed. This deportment is characteristic of terpin.

The amount of substance burned was but 0·0975 grm. The increase in weight of the potash bulbs and tube was 0·225 grm. This gives carbon 62·93 *per cent.* The calculated quantity is 63·16 *per cent.*

The substance is therefore hydrated terpin or crystallized turpentine camphor $C_{20}H_{20}O_4+2aq$. Perhaps we should say it is one of the terpins, since, according to Berthelot, the different oils of turpentine, on hydration, yield crystals of different degrees of solubility.

The formation of this substance in the buried tree presents no difficulties, since we know on the authority of Dumas, Deville and others, that oil of turpentine in contact with water, combines with the latter in absence of acids or other powerful agents of chemical change.

Prof. Brewer, who is familiar with the timber of California, is of the opinion that the wood to which the crystals were attached is that of a pitch pine, *Pinus ponderosa.*

This appears to be the first recorded instance of the occurrence of crystallized terpin, native.—*Amer. Jour. of Science and Arts, March*, 1867.

* Mr. Blake has measured and figured both the native and artificial crystals and has in reserve some other valuable observations which it is to be hoped he will shortly publish.—S. W. J.

ON THE APPLICATION OF DISINFECTANTS IN ARRESTING THE SPREAD OF THE CATTLE PLAGUE.

Report to Her Majesty's Commissioners.

By William Crookes, F.R.S.

(Continued from page 439, vol. xxxviii.)

37. It became now a matter of considerable interest to ascertain in what way carbolic acid acted in arresting decomposition, and the following experiments were made, with the object of clearing up this point:—

XIII. Albumen was mixed with four times its bulk of water, and a one per cent. solution of pure carbolic acid was added to it. No change took place for the first few minutes, but after a little time a white cloudiness was formed, which gradually collected together into a coagulum. On separating this, and exposing it freely to the air, it entirely resisted putrefactive decomposition. The solution strained from the coagulum still contained carbolic acid and uncoagulated albumen.

XIV. The same experiment was repeated with pure cresylic acid. This acid has still less affinity for albumen, the mixed solutions remaining clear for nearly half-an-hour.

It is evident, therefore, that the tar acids do not owe their special action to their coagulating powers on albumen, for the last two experiments show, contrary to the generally received opinion, that their affinity for this body is but slight.

XV. A few drops of carbolic acid, added to half a pint of sugar syrup and yeast in full action, immediately put a stop to the fermentation.

XVI. Fresh brewer's yeast was washed with the solution of one per cent. of carbolic acid, and then with water. Its power of inducing fermentation in a solution of sugar was entirely destroyed, although no perceptible change in the appearance of the yeast cells could be detected under the microscope. This experiment was repeated several times, and always with the same result, although when the yeast was simply washed in water it readily induced fermentation.

The odor of carbolic acid adhered most pertinaciously to the

yeast, and by no ordinary amount of washing and exposure to the air could it be removed.

XVII. Strychnine was added to a mixture of yeast and sugar solution in full fermentation. No visible effect was produced, the evolution of carbonic acid continuing as brisk as before.

The above experiments, some of which were performed by my friend Mr. Spiller, prove conclusively that carbolic acid has a special action on the fermentation induced by organized matter; it not only arrests it instantly when in progress, but it prevents the development of future fermentation.

38. The action of the tar acids was now examined on certain chemical bodies, which are supposed to act by fermentation, in order to see if they were influenced in the same manner.

XVIII. A solution of diastase (infusion of malt) was mixed with thick starch paste, and a one per cent. solution of carbolic acid. On gently heating for a short time, the starch was converted into dextrine, as completely as if no carbolic acid had been present.

XIX. Amygdalin was mixed with synaptase (emulsion of sweet almonds) in the presence of carbolic acid. The formation of the essential oil took place with apparently the same readiness as if carbolic acid had been absent.*

The foregoing results show that carbolic acid has no action on purely chemical ferments. These consist of definite nitrogenous compounds acting simply by chemical affinity, and therefore ought not to be classed with true ferments, which are living bodies. It therefore appears that carbolic acid acts by attacking vitality in some mysterious way, and where an effect is merely due to so-called catalytic force, it exerts no interfering action.

39. The action of carbolic acid on vitality was then tested in other ways:—

XX. Cheese mites were immersed in water, where they lived for several hours. A few drops of a solution of carbolic acid containing 1 per cent. added to the liquid, killed them instantly.

XXI. An aqueous solution of carbolic acid was added to water

* These last two experiments are confirmatory of a statement in Dr. Lemaire's work "Sur l'Acide Phénique."

in which a small fish was swimming. It proved fatal in a few minutes.

XXII. A very minute quantity of a weak solution of carbolic acid was added, under the microscope, to water containing various infusoria, such as bacteria, vibrios, spirilla, amœbæa, monads, euglenæa, paramecia, rotifera, and vorticellæ. The acid proved instantly fatal, arresting the movements of the animalcules at once.

These animalcules are the almost invariable accompaniments of putrefactive fermentation. The above experiment has been tried with putrid blood, sour paste and decayed cheese, and in every instance the destruction of vitality and the arrest of putrefaction have been simultaneous.

XXIII. Caterpillars, beetles, crickets, fleas, moths and gnats were covered with a glass, the inside of which was smeared with carbolic acid. The vapor proved quickly fatal. It allays the pain caused by the stings of bees, wasps, hornets, and gnats, if applied pure, or in strong solution, to the wounded part.

I find it recorded by Dr. Lemaire and other observers that carbolic acid vapor will also kill flies, ants and their eggs, lice, bugs, ticks, acari, musquitos, aphides, butterflies, earwigs, woodlice, cockchafers, centipedes, and other insects of this size; its vapor, however, does not appear to be strong enough to act injuriously on animals larger than mice. When such animals are killed with it, their bodies dry up in the air, and resist putrefaction for some time.

40. From the intense aversion shown by all insects to the odor of carbolic acid, it is probable that the plentiful use of this agent would effectually preserve cattle from those terrible scourges met with in certain parts of Africa, the zimb and tsetse fly. The effects following the bite of the latter have been described to me as being almost identical with the symptoms of cattle plague.

M. Lucien Baird, in speaking of the invasions of the large ants of Mexico, says that when one of their battalions threatens his house, he sprinkles a little carbolic acid in front of it. The army immediately makes a detour to avoid the obstacle.

When an animal is killed by the injection of a saturated

aqueous solution of carbolic acid into its veins, circulation is instantly arrested, the blood is not coagulated, and no alteration, either in the shape or the appearance of the globules, is detected under the microscope. The only apparent change consists in the immobility of the globules.

41. In the *Annales de Chemie et de Physique* for October last, there is a letter from M. Béchamp to M. Dumas, in which it is said that creosote appears to be the agent which most strongly opposes the development of organic ferments, but that it does not interfere with the living ferments or animalcules when they are once developed. This assertion is in direct opposition to all my experiments, about the accuracy of which I have no doubt whatever, having submitted them to repeated tests. The powerful action which carbolic acid exerts on the phenomena of life is the most remarkable property which it possesses. It may be looked upon as the test proper for distinguishing vital from purely physical phenomena, and in most cases its action is characterized by the certainty and definiteness of a chemical re-agent. In the presence of carbolic acid the developement of embryotic life is impossible, and before its powerful influence all minute forms of animal life must inevitably perish.

42. It may be considered as definitely proved that the vapor of carbolic acid, in the atmosphere, exerts a special selective power on all minute organisms possessing life. If the contagious matter of cattle plague is possessed of organic vitality, as must be now admitted, it will be destroyed, beyond the possibility of revival, when brought into contact with the vapor. French experimentalists have repeatedly tested the influence of carbolic acid on vaccine lymph. They have employed lymph both pure and mixed with a trace of carbolic acid. The vaccination with pure lymph was followed by the usual results, but in no single instance was any effect produced by the lymph containing carbolic acid.

43. The following experiment tends to show a similarity between the action of vaccine virus and that of the cattle plague:

XXIV. The air from a close, highly infected shed (57), containing animals in the last stage of the disease, was drawn through glass tubes containing tufts of cotton wool, in the expec-

tation that some of the virus cells, supposed to be floating about in the atmosphere, would be arrested by the wool.

The suction was continued for ten minutes. One piece of the infected wool was then exposed for half an hour to the vapor of carbolic acid. Two apparently healthy calves were selected, and an incision being made beneath the skin, these pieces of wool were respectively inserted in each. The animal thus inoculated with the infected wool, which had been exposed to carbolic acid, remained perfectly well, but the other animal took the disease, and died in a few days.

I place this upon record, although I do not attach much importance to it, as the experiment was made at a farm where the plague was raging; and it is quite possible that the calf which died did not take the disease from the wool. Unfortunately, time would not permit me to verify this experiment so as to place its results beyond doubt. It is likewise desirable to inoculate with the virus itself, collected from the eyes, &c., of diseased animals, mixed with different quantities of carbolic acid. There can be but little doubt that the issue would prove satisfactory.

44. I first employed carbolic acid on a large scale early in December last. Considerable experience suggested to me the best way of proceeding, and I consider that the results have proved that my views were correct. A detailed account of the various experiments is given in the next part.

I had two objects in view; firstly, to apply the energetic disinfecting powers of sulphurous acid for the purpose of purifying the cattle sheds two or three times a week; and secondly, to trust to carbolic acid as a permanent means of protecting the animals from extraneous infection. Sulphur fumigation and carbolic acid agree very well together, and somewhat assist each other's action; whereas oxidizing disinfectants, used either with carbolic acid or sulphurous acid, are inoperative; the energies which should be directed to the destruction of infection being exhausted in neutralizing each other. When dealing with such an overwhelming amount of putrefying and putrescible organic matter as is met with in a farm-yard, it is of paramount importance to economize as much as possible the disinfectant. I have already shown that chlorine and ozone are very wasteful agents.

As it is our chief aim to destroy the activity of cattle plague virus, (the destruction of ordinary farm-yard odors being of secondary importance,) even sulphurous acid is open to objection on the score of waste; but carbolic acid goes direct to the root of the evil, and acts solely where it is most required, without touching the innocuous dunghill stenches. Owing to the power possessed by carbolic acid of arresting and preventing decomposition, it checks the evolutions of these offensive odors, and, by retaining the nitrogenous compounds in the manure, it greatly increases its value. At the same time it stops the development in the manure of minute animal organisms, and it has been observed that flies never congregate about dunghills where carbolic acid has been habitually used (100), whilst the liquid manure which oozes from them is without smell. In stables and cowsheds this property is of very great importance, both as regards the comfort and health of the animals, especially during the hot summer months.

45. Another advantage of carbolic acid, over almost all other disinfecting agents, consists in the fact that its vapor is never injurious or unpleasant to cattle. Indeed, they seem to like it; they lick the woodwork of their stalls, after it has been sprinkled with the undiluted acid (69), and will readily drink water in which the acid has been dissolved. If applied to their mouths in its undiluted state, I am told that it will produce temporary blistering; but such blisters are entirely free from danger, and heal very rapidly. From its action on the human skin, if carelessly used, I have no doubt that inconvenience to the cattle might arise; but although carbolic acid has been used freely by me, and by many farm servants under my direction, in the treatment of several hundred animals, I have not had a single instance of this action brought under my personal notice.

If undiluted carbolic acid is allowed to remain on the hands, it will act as a mild caustic. This inconvenience is, however, very slight, and may be avoided with ordinary care. I have had my hands repeatedly covered with carbolic acid during the last four months, without experiencing any painful effects. Ample warning of the approach of blistering is given by a preliminary smarting, and if this is attended to, and the acid rubbed or washed

off, no further annoyance is felt. Sweet oil rubbed over will remove the last traces of the acid.

46. Finding that medical and scientific writers were unanimous in the opinion that small internal doses of carbolic acid were attended with no injurious effect, I have recommended the addition of small quantities both to the food and water given to the whole of the stock, sick or healthy, on the farm. This has a two-fold action. The water given to cattle is seldom very pure, and carbolic acid will neutralize any virus of infection which may happen to have found its way into it. Moreover, after drinking aqueous carbolic acid, the breath smells of it for some hours. Now, it is very probable that the germs of infection enter the animal system through the mouth (17), and by thus loading the breath with the antidote, it is reasonable to suppose that these germs would be destroyed before they had an opportunity of doing harm. The vapor of the acid, diffused through the air, will kill large insects; it is reasonable, therefore, to suppose that it will much more readily destroy microscopic germs when brought into contact with its vapor during respiration. Besides, it is not unlikely that after the system has become habituated to repeated doses of carbolic acid, it will acquire additional power of resisting the first attack of disease.

Since this investigation was undertaken, I have made a collection of cases, illustrating the good effect of carbolic acid in arresting the spread of the cattle plague in various parts of England and the Continent. I will not, however, enter into particulars, but confine myself to those cases which have come under my own immediate knowledge.* I have not yet met with a single instance in which the plague has spread on a farm where this acid has been freely used.

On the Adulterations of Carbolic Acid, and their Detection.

47. The official recommendations (50) have naturally brought

* It may, however, be of interest to state that carbolic acid was the principal substance used in the Jardin d'Acclimatation, in the Bois de Boulogne, to prevent the spread of the disease amongst the animals in that establishment. According to the *Journal of the Society of Arts* for April 13, 1866, more than twenty pounds of this acid were used daily, in washing the walls and mangers, and in sprinkling the floors of the stables and enclosures, and it is to its constant use that the arrest of the malady is generally attributed.

into market many substitutes for carbolic acid, in which the valuable agent is diluted with cheap inert bodies, whilst the price charged, in some cases, is higher than that of the genuine article. Specimens of two such substitutions, called cresyline and carboline, were forwarded to the Royal Cattle Plague Commission for approval, "as being more certain disinfectants than most of the carbolic acids now being sold to the public, many of which contain but a very small percentage of that acid." It was stated that the preparations contained over 60 per cent. of carbolic acid, and were miscible with water. As it was possible from these and other reputed advantages that the preparations might be of considerable value, they were forwarded to me for examination. Cresyline consists of alkaline water, and tar oils boiling above 370° C., therefore containing little or no carbolic or cresylic acid. Carboline is a dilute solution of caustic soda, containing 4·1 per cent. of carbolic acid. The price of these preparations is higher than that ordinarily charged for good commercial carbolic and cresylic acids.

Other creosote samples from different makers were found to contain respectively 4·5, 2·6, 5·9, and 4·2 per cent. of carbolic acid, the rest being tar oils. In other instances, articles have been sold as commercially pure carbolic acid which were found to contain from 30 to 50 per cent. Frequently a very fœtid sulphur compound is allowed to remain. This should be avoided, as although the antiseptic powers of the liquid are great, the offensive odor which it diffuses round the neighborhood is excessively nauseous.

48. It is by no means difficult to detect the adulterations referred to above. Commercial carbolic acid is soluble in from 20 to 70 parts of water, or in twice its bulk of a solution of caustic soda, while oil of tar is nearly insoluble; but if the amount of carbolic acid be increased some remains undissolved.

To apply the tests:—1. Put a teaspoonful of carbolic acid in a bottle, pour on it half a pint of warm water, and shake the bottle at intervals for half an hour, when the amount of oily residue will show the impurity. Or, dissolve one part of caustic soda in ten parts of the carbolic acid. As before the residue will indicate the amount of impurity.

These tests will show whether tar oils have been used as adulterants; but to ascertain whether the liquid consists of a mere solution of carbolic acid in water or alkali, or whether it contains sulpho-carbolic or sulpho-cresylic acids, another test must be used, based upon the solubility of these, and the insolubility of carbolic acid, in a small quantity of water. In this case proceed as follows:—2. Put a wine-glassful of the liquid to be tested in a bottle, and pour on it half a pint of warm water. If the greater part dissolves, it is an adulterated article. Test the liquid in the bottle with litmus paper; if strongly acid it will show the probable presence of sulpho-acids, whilst if alkaline it will show that caustic soda has been probably used as a solvent.

These tests are not given as having any pretensions to scientific accuracy, but as affording persons who are desirous of using carbolic acid, and are willing to pay a fair price, a rough and ready means of seeing if they are being imposed upon.

If greater accuracy in the tests are required, recourse should also be had to distillation with a thermometer—carbolic acid boils at 184° C., cresylic at 203° C., whilst xylic acid (96), which may possibly be present, and has great antiseptic value, boils at 220° C. Reichenbach's pure creosote (33) boils at 219° C.

(To be continued.)

NITROPRUSSIDES, THEIR COMPOSITION AND MANUFACTURE.

Some doubt has always been attached to the composition of the nitroprussides since their discovery by Playfair. Some recent researches, however, by E. A. Hadow, which are remarkable for the skill and ability they display, have removed all uncertainty in the matter, and have given us a clear insight into the formula for this interesting class of salts. Mr. Hadow started from the assumption that the nitroprussides are formed from the ferridcyanides, by the displacement of an atom of alkaline cyanide by one of the oxides of nitrogen. Thus:—

$$\underbrace{Fe_2Cy_6M_3}_{\text{Ferridcyanide.}}—MCy+No\,x=\underbrace{Fe_2Cy_5NOxM_2}_{\text{Nitro-prusside.}}.$$

The question to be solved was, *What* oxide of nitrogen replaces the M Cy? In the first instance, pure binoxide of nitrogen was passed through a warm solution of ferridcyanide of potassium, which was acidulated with sulphuric acid, so that the NO_2 might have the easier work of replacing HCy, if it could. The liquid became blue and muddy, but no trace of nitro-prusside was formed. The next experiment was to pass the red nitrous vapors from starch and nitric acid through the warm acid solution of ferridcyanide. The difference was wonderful; no prussian blue appeared, the color changed rapidly to the red of nitro-prusside, and much hydrocyanic acid came off. The conversion to nitroprusside was almost perfect. It thus became clear that the replacing oxide of nitrogen is either NO_3 or NO_4. That such is the case is further shown by a very simple experiment, the reverse of the last. On adding to a solution of pure nitro-prusside a solution of potash and some prussic acid, and warming, the red of the nitro-prusside changes for an instant to deep yellow, and then to pale yellow. The solution is found to contain ferridcyanide, with plenty of nitrite, but no trace of nitroprusside. Hence NO_3 or NO_4 has been replaced by KCy, and ferridcyanide reproduced.

To determine between NO_3 and NO_4 the author sought to replace the KCy by pure NO_3, obtained by the action of acetic acid on alkaline nitrite, whereby NO_4 is absolutely excluded. Ferridcyanide of potassium solution was mixed with a solution of corrosive sublimate and acetic acid, and a nitrite added, and the whole was left for some hours, when, on examining the mixture, nitro-prusside was found in abundance.

The reaction was as follows:—

$$Fe_2Cy_6K_3+HgCl+NO_3=Fe_2Cy_5NO_3K_2+HgCy+KCl.$$

And the true formula of the sodium salt is—

$$Fe_2Cy_5NO_3+Na_2+4HO=306.$$

Curiously enough, this formula agrees more closly with Playfair's analysis than any yet proposed.

The success of this reaction on the small scale suggested it as a means of manufacturing nitroprusside on the large scale. The following is the process Mr. Hadow gives :—

A strong solution of caustic soda is prepared, and thoroughly saturated with the nitrous acid vapors from starch and nitric acid (old battery acid does well). The amount of true nitrite of soda, $NaONO_3$, in this solution is determined by permanganate, by taking a small measured quantity, diluting largely with water, acidifying with sulphuric acid, and observing the amount of standard permanganate decolorized. $Fe_4=NaO,NO_3$, in decolorizing power. The amount of real nitrite of soda in the solution being known, is recorded on the bottle.

A mixture of any bulk is then made in the following proportions :—

A	Ferridcyanide of potassium 332 grs. Acetic acid (Beaufoy's) . . 800 grs.	in ½ pint of boiling water,
B	Corrosive sublimate . . . . 164 grs. Solution of nitrite of soda = 80 grs. of true $NaONO_3$	make up to ½ pint with cold water,

adding acetic acid, if necessary, until quite clear. Pour the cold solution B into the hot solution A. The mixture becomes at first turbid, but in a few minutes afterwards quite transparent. It should be kept at a temperature of 140° (at which point little nitrous acid is lost) for some hours, with addition, if necessary, of more nitrite of soda and acetic acid from time to time, until all ferridcyanide has disappeared. When this is the case, the whole mixture may be boiled down, until, on cooling, it solidifies to a thick paste. The right state of concentration has been attained, when, on beating the paste up, and squeezing in linen, a *pale* syrup, chiefly of acetate of potash, is expressed. The pearly-looking mass, freed from acetate of potash as far as possible, must be redissolved in such an amount of boiling water, that, on cooling, a large proportion of cyanide of mercury separates in white pearly scales, quite free from nitroprusside crystals. On squeezing in linen, a deep-red solution of nitroprusside is expressed, and a white, pearly mass of cyanide of mercury remains on the linen. On concentrating the red filtrate, a large crop of crystals of nitroprusside of sodium is obtained in a mother-liquid containing more or less cyanide of mercury, in pearly scales, easily separated by throwing the whole on a moderately coarse hair

sieve, which will retain the prisms of nitroprussides of sodium, and allow the cyanide of mercury to pass through. The prisms may be washed quite clean by allowing the cyanide of mercury to settle down in the filtrate, and using the clear supernatant fluid for washing. The operation, can of course, be continued as far as it may be deemed profitable. If the cyanide of mercury is not wanted as such, it can be made to furnish hydrocyanic acid and corrosive sublimate for use again, by boiling with hydrochloric acid.

It may be added, in conclusion, that nitroprussides react well only with monosulphides. The more of a persulphide the solution contains, and the deeper the yellow color, the less distinct is the reaction. This difficulty can be overcome by warming the yellow persulphide with sufficient cyanide of potassium to decolorize it, when the beautiful carmine of the monosulphide will be obtained.—*London Pharm. Journ., February*, 1867.

DEODORIZING INDIA-RUBBER.

The extremely disagreeable odor attaching to india-rubber manufactures, and the power possessed by them of imparting a nauseous taste to liquids or other substances, has long been a difficulty in the way of its use for many purposes for which india-rubber is peculiarly adapted. To obviate this evil many expedients have been resorted to, but none hitherto with perfect success, and this on account of the strong tendency which india-rubber has to acquire and retain odors. The new process, invented by Mr. S. Bourne, depends upon the still greater affinity possessed by charcoal, especially animal charcoal, for all kinds of odors, and its great capacity for the absorption of gases. The practical difficulty lies in so using the charcoal as not to injuriously affect the articles with which it may be brought into contact, and this has now been overcome by very simple means.

The mode of application necessarily varies according to the description of articles which are thus treated. Generally speaking, they are laid in shelves or trays in a hot chamber, with a thin stratum of charcoal beneath and on top, and exposed to a temperature of from 120 to 180 degrees for from three to six

hours, after which they are removed from the charcoal, having sustained no other alteration than the all important one of being rendered devoid of smell and incapable of imparting any taste to liquids or other substances they may touch. Under proper management the most delicate textures can be thus dealt with without being impaired either in substance or appearance. The most convenient mode of applying heat is by hot water or by steam surrounding the vessel or chamber in which they are placed. One very considerable advantage of this process is, that for a large number of vulcanized articles it can be carried on in co-operation with the heating or curing by which the vulcanization is effected, and they leave the chamber at once free from odor. It is equally applicable to india-rubber in sheet, spread fabrics, or the garments or other articles made therefrom when fully made up, such as the ordinary "macintosh" clothing, air and water cushions, etc. The use of this process enables the inventor to produce his "flexible diaphragms" (which were first brought before the public at the Dublin Exhibition, where they obtained a prize medal) in so pure a state that they may at once be used with the most delicate wines and other liquids. The diaphragm itself is a contrivance for the division of casks or other vessels into two separate chambers, by means of a flexible partition, which fits to the upper or lower part of the vessel alternately, or into any intermediate position, so that whatever the quantity of liquor contained within it, the air (though still exercising its pressure through the medium of the diaphragm) is separated from it by an impervious shield, and thus the injurious effects of exposure to atmospheric influence are altogether avoided, and any portion of the liquor may be withdrawn at pleasure, and as often as may be, without any admission of air to the remaining portion. In this way vessels of wine and beer are stated to have been actually kept in constant use for six and twelve months without any fermentation or formation of acid resulting. It is equally applicable to other liquids for domestic use or for medicinal or scientific purposes, the fluid remaining as completely secured as if the vessel were actually full.

An adjunct to this invention, and which admits also of inde-

pendent use, is in the elastic valves, in two varieties—the one for giving vent to the products of fermentation, when desired; such as the carbonic acid gas generated by malt liquors, etc., the other for giving admission to air, so as to enable the liquid to flow through the tap or other orifice. In the one case a circular disk of vulcanized india-rubber is made to cover a small opening through which the gas is free to escape, but meets in its passage with the india-rubber, which being forcibly held down round its edge is at liberty to become distended, and in so distending opens a number of very minute holes, which have been previously pierced through its surface. When the pressure is removed, the disk again becomes flat and its orifices shut. The degree of pressure to be sustained before these perforations open is perfectly under control, and may be adjusted to any required degree.

In the other form a small cylinder of india-rubber, closed at its lower end, is drawn over a corresponding cylinder of wood with a hole through its center, and then tightly bound at its upper edge. The india-rubber has a number of slits made in its substance, which (when any orifice through which the liquor may flow is opened) receives tbe pressure of air, and yielding to this, open, so as to let the air enter the vessel in exactly the same extent as the liquor is withdrawn. When the flow of liquor is stopped, the edges of the slits become drawn together, so as to prevent any escape of liquor or gas in a wrong direction. Should there be any pressure from within upon the surface of the india-rubber, this will only tend to the more perfect closing of the slits, and thus, while affording sufficient ingress, altogether restrain egress.—*London Pharm. Journ., February*, 1867, from *Journ. Soc. Arts.*

ON FRUIT ESSENCES.

By M. Kletzinski.

The products known under the name of Fruit Essences, are alcoholic solutions of different ethers, to which is sometimes added certain acids, or certain natural essences. Glycerine is found in all; it appears to blend the different odors, and to

harmonize them. It is necessary to state, that the alcohol used, as well as all the other substances, must be chemically pure.

Each Column represents in Cubic Centimetres the quantity to be added to 100 *Cubic Centimetres of Alcohol.**

Names of the Essences.	Chloroform.	Nitric Ether.	Aldehyde.	Acetate of Ethyl.	Formiate of Ethyl.	Butyrate of Ethyl.	Valerianate of Ethyl.	Benzoate of Ethyl.	Œnanthylate of Ethyl.	Essence of Persicot.	Sebacic Ether.	Salicylate of Methyl.	Amylic Alcohol.	Acetate of Amyl.	Butyrate of Amyl.	Valerianate of Amyl.	Essence of Lemon.	Essence of Orange.	Alcoholic Solutions saturated in the cold of			Glycerine.
																			Tartaric Acid.	Oxalic Acid.	Succinic Acid.	Benzoic Acid.	
Pine-apple	1	...	1	....	..	5	....	....	...	..	..	....	...	...	10	...	....	....	...	....	....	...	3
Melon	....	...	2	...	1	4	5	...	...	...	10	..	...	...	...	...	....	....	...	....	....	...	3
Strawberry	....	1	....	5	1	5	....	....	...	....	....	1	...	3	2	...	....	....	...	....	....	..	2
Raspberry	....	1	1	5	1	1	....	1	1	....	1	1	....	1	1	....	....	....	5	...	1	..	4
Gooseberry	....	...	1	5	...	....	....	1	1	....	..	....	....	...	...	....	....	....	5	...	1	1	...
Grape	2	....	2	...	2	....	....	....	10	....	....	1	...	...	...	....	....	....	5	...	3	...	10
Apple	1	1	2	1	...	....	....	....	..	....	....	....	....	....	....	10	....	....	...	1	....	....	4
Orange	2	...	2	5	1	1	....	1	...	....	....	1	....	10	...	...	....	10	1	...	....	....	10
Pear	...	....	....	5	....	....	....	....	...	....	....	....	....	10	...	....	....	....	...	....	....	....	10
Lemon	1	1	2	10	....	....	....	....	...	....	....	....	....	....	....	10	....	....	10	....	1	...	5
Black Cherry	....	...	...	10	....	...	....	5	2	...	...	....	....	....	....	....	..	....	...	1	....	2	...
Cherry	...	....	....	5	....	....	....	5	1	....	....	....	....	....	....	....	....	....	...	....	....	1	3
Plum	...	....	5	5	1	2	....	....	4	....	....	....	....	....	....	....	....	....	..	....	....	....	8
Apricot	1	....	....	....	....	10	5	....	1	....	....	2	....	....	1	....	....	....	....	1	....	....	4
Peach	....	....	2	5	5	5	5	....	5	....	1	2	....	....	....	....	..	....	....	....	....	....	5

—*London Pharm. Journ., February*, 1867, from *Dingler's Polytech. Journal*, clxxx. p. 407

A DISCOURSE ON TITLES, ETC.

By Edward Parrish.

By the public acts of this Association and of the several Colleges of Pharmacy, we have repeatedly asserted our claim to the title of a Profession—the Profession of Pharmacy;—but the public, for whom we labor and from whom we claim the fruits of our labor, are no doubt variously impressed with the justness of this claim according to their appreciation of us individually, and their understanding of the term Profession as thus applied.

Do we make good our claim by corresponding actions? The

* In other words, each Column represents the number of measures to be added to every 100 measures of alcohol.

so-called profession of medicine has a well recognized status in the community; it has been for centuries placed in a separate and quite distinguished niche in the social edifice. Doctors were long expected to appear in broadcloth, with well polished shoes, clean soft hands and well shaven chins. They must carry themselves with a genteel and professional air, and converse in good English with some show of classic lore.

The professional intercourse of such with the public is somewhat reserved; guided by rules of ethics that shut them out in good degree from the ordinary effects of competition, they sit in closed offices, approachable only by a knock or ring at the bell. Neither trafficking in merchandize nor creating material products, their commodities are knowledge and skill, and they exact fees rather in proportion to their reputation than the amount of labor bestowed.

In which of these points, brethren of the pestle and mortar, do we resemble these professional men *par excellence?* As we look over our Conventions, do we recognize that odor of gentility, that professional air, which in popular estimation would entitle us to range with these distinguished classes?

I admit that in regard to dress and manners the old-fashioned distinction to which I have alluded has in good degree disappeared with the progress of civilization and refinement, and he must be ignorant indeed who would found any classification of his fellow citizens upon such unmeaning particulars.

Language furnishes a rather higher grade of distinction, generally giving some clue, if not to the extent and variety of education, at least to early domestic training and culture, yet who has not known most esteemed doctors of the law, of medicine and even of divinity, who have misused and mispronounced the plainest words, and have talked as unpolished English as an ordinary tradesman or mechanic?

The truth is that now-a-days the masses are being brought up in general education and refinement where the learned professions were two generations ago, and if asked to select models of intelligent, influential and even cultivated men we should probably find almost as many in mercantile circles and among master

mechanics, bankers, financiers and business men as among those formerly characterized as of the learned professions.

A long recognized difference between the professional man and tradesman has been adverted to in the fact that the former deals in ideas and opinions, and is approached through some formality in a dwelling or office, while the latter, to use the familiar phrase of the English, keeps open shop, buying and selling merchandize for a profit.

If we were to picture a preparer and dispenser of medicines who should justify the public estimate of a strictly professional man, we might fit him out somewhat as follows: He should have a neat suit of rooms in a building having no aspect of a shop, no bulk windows or show cases. On entering the reception room the patron should be shown to a seat, furnished with suitable reading matter during the necessary detention. The prescription to be compounded should be taken to the laboratory adjoining, duly registered and prepared. Any medicine or medicinal appliance which should be sought without a physician's prescription could be furnished to order, or might be the subject of consultation with the pharmacist, whose office should adjoin the reception room and the laboratory, and be furnished with analytical tests and apparatus, a scientific library and other conveniences. The stock, which would be strictly confined to those articles needed in sickness and as dietetics, would be arranged in the laboratory and store room and need not be displayed to the view of the public.

The numerous fancy articles, appliances for the toilet and empirical preparations which are displayed in cases in our shops, would be missed from this genteel and professional pharmacy, and their places might be filled by many appropriate and attractive features combining utility and ornament.

The proprietor of this establishment must of course be an educated man, possessing a full and accurate knowledge of all the sciences accessory to his art; his attention would be directed to giving advice equally to physician and patient, who would resort to him on the ground of his superior attainments and exclusive devotion to the professional duties pertaining to the selection, preparation and dispensing of medicines. Eschewing every

species of quackery and depending only upon intrinsic merit for success, such a pharmacist might be independent of competition, and if he possessed adequate personal qualifications for his profession, a good situation and large constituency, and was respected by the medical profession as he would deserve, he might demonstrate the feasibility of taking from Pharmacy its unprofessional features and giving it the external appearance of a profession.

Keeping open shop is certainly in no sense degrading, and I would not in this portraiture of the ideal professional pharmacist be understood as setting him one whit above those of us who, in good faith toward physicians, the public and each other, fulfil the obligations of our present position; the establishment of such a professional dispensing office would be an experiment upon the public demand for something more *recherché* than we now have in this country, but it would not insure more accuracy or neatness in the execution of prescriptions or more completeness in the arrangements for supplying the wants of the sick than at present are secured in hundreds of our first-class shops.

As to dealing in ideas and opinions constituting a feature of professional as contradistinguished from other pursuits, even that distinction fails when we consider how large a share these elements have in many other branches of trade and business. Science has entered the work-shop and counting-house, and is perhaps more thoroughly appreciated in many other industrial occupations than in medicine, while those branches of education the aggregate of which constitute what is technically called learning, find votaries in those of almost every business pursuit.

Our plain republicanism in America has happily abolished the aristocratic titles in which many Europeans delight, and it is equally proper that we should confine ourselves in the circles of science and professional learning to those titles which convenience calls for. The title of *Doctor* applied to the practitioner of medicine is convenient but not always indicative of a high grade of attainment. Practically it means something far less dignified than was intended when it was applied only to individuals of distinguished learning and ability.

Some years ago a physician of repute in the South, who at-

tended my course of instruction in Pharmacy and seemed to have a pretty high appreciation of my knowledge and skill, said to me, Why don't you matriculate in some medical school and get the title of M. D. to add to your name? You would find it very promotive of your reputation. This is not an exclusively Southern idea, though perhaps more general in those communities in which labor is least respected; it pervades somewhat our practical Northern thought, but I trust is diminishing as genuine republicanism grows. As if to cure any undue estimate of this title, it can be had from legally authorized Colleges almost for the asking.

In medicine several kinds of *pathies* are represented by chartered Colleges, and even the so-called regular practice has cheap concerns sailing under the name of Colleges and even Universities, duly authorized to confer the M. D. upon any ignoramus who may seek it at their hands almost without study—quite without any adequate instruction. Moreover, anybody who wants to present to the public his valuable cure for cancer or consumption may prefix Dr. before his name or M. D. after it, and whether the title came to him through the formalities of a College Commencement, or was assumed unasked to promote the ends of his business, it serves as a handle to his name useful in deceiving the most ignorant, but of no account in the estimation of men of intelligence and good sense.

The term *Professor* is sometimes put very prominently before us as one of superior distinction—a still larger handle to the name. We have, however, professors of hair cutting, of carpet shaking, of dancing, and of the "noble art of self defence," as well as of medicine or surgery; and if we may judge of the public appreciation of the term by the use made of it in the newspapers, it has a much wider significance than that of men of learning or science appointed to the office of teachers by incorporated Colleges, which is its technical definition.

I have alluded to the fact that among us competition is equally open to all who please to invest the necessary energy and capital in business. We have colleges of Pharmacy and give Diplomas, and a title (which, however, is not commonly used;) and although I would be the last to discourage pharmaceutical education as

carried on in these institutions, believing it to be of incalculable value not only to individuals availing themselves of them, but through them to the whole community, yet we cannot disguise the fact that the Diploma is very far from giving assurance of any real superiority. Most young Pharmacists of energy and enterprise appreciate scientific knowledge so highly as to seek the Colleges and to obtain a Diploma, and yet if we look for those in our several communities who enjoy the largest share of patronage both from physicians and the public, we shall find a considerable proportion of them have never attended upon systematic instruction in a College. The young graduate in Pharmacy struggling into business thinks it very hard that he should be outstripped by a competitor who shows no diploma, and yet he finds sooner or later that, in the race for business, he wins who is the best business man and applies himself with the most energy and ability to serve the public.

On the subject of legal protection my views have changed with the growth of experience; formerly I could see many reasons for legal restrictions protecting the professions from the results of competition, and bestowing a sort of bonus upon scientific acquirements. Now it appears to me that, like all other partial legislation, this restrains rather than promotes the great interests involved. Let us extend intelligence among the masses, and break down every false pretense by fair and equal competition, trusting to the good sense of the people to promote and conserve the cause of education and of the public health.

Since, then, the claim the educated preparer and dispenser of medicines makes to the title of a professional man is but partially acknowledged by the public, and since in our time and country it is no discredit to the most accomplished man of science that he thrives through the honest pursuit of a useful trade, I, for one, am willing to abandon any such pretensions to the professional character as involve the use of a title of distinction.

A name or title to designate our calling is, however, a desideratum; a title which should at once be brief, distinctive, intelligible and universal, for, strange to say, though the craft of the apothecary has been practiced more or less, in connection with the science and art of medicine, from the earliest periods of which

we have historical records, we have in our language no universal method of designating it. The term *Apothecary* has a different meaning in England from that applied to it on the continent of Europe and in this country. In England they call a man a *Chemist and Druggist* who in the United States would be called a *Pharmaceutist*, though this latter term is by no means universal among us, our brethren in New England still calling themselves apothecaries, and a very large number in all sections of country having never yet adopted the new word Pharmaceutist. The French have a good name for the purpose in *Pharmacien*, and some among us have anglicized this, spelling it *Pharmacian*, corresponding in termination with physician, and an improvement upon its four-syllabelled synomyn. This is very rarely used, however, and I think rather less adapted to our purpose than Pharmacist, the term I have used in this paper and which I am inclined to prefer, from its close correspondence with druggist and chemist, its easy pronunciation and spelling, and its being short, and hence convenient to write and to speak. It may be said, as we have no uniformity in the use of the old terms, why introduce a new one to complicate the matter? I reply that I consider the whole question of terms an open one at present. Uniformity would now be quite impossible, and it is necessary that by discussion we should arrive at a clear and well considered choice, adopt a term that would be uniformly acceptable, and give it the sanction of a formal approval by this and other representative bodies of those interested. This is one of the subjects which has a common interest for this Association and the British Conference, and if Pharmacist or Pharmacian should be the noun adopted to designate the individual, Pharmacal might be the adjective used in connection with the respective names of our Associations, and wherever we now use the very long and awkward word Pharmaceutical. In this connection the names to be applied to our stores or shops should also be discussed. Some Pharmacists have quite repudiated the very proper term of *shop* as applied to their places of business, preferring the more pretentious word *store*, in fact the general practice indicates that choice. To this is added the adjective Pharmaceutical, or more

frequently drug and chemical, sometimes all three. Since the nature of the business is equally well understood by the public in either case, the sign being less important than the appearance of the front window and of the shelving and show cases within, it becomes a matter of choice with each individual how he will designate his business on his sign, his business cards, his labels, or in his advertisements. Acting on this principle I have selected the name "Pharmacy" to designate my place of business. I find it convenient, brief and sufficiently distinctive, though liable to these apparent objections. The term Pharmacy is applied in a general way to the science and art which we practice, and the use now proposed for it is such as to give it a direction to the place in which we practice it. Moreover, my treatise on Pharmacy is commonly called among booksellers "Parrish's Pharmacy;" my store has the same appellation. These objections should be considered, however, in connection with the acknowledged flexibility of language, and the fact that the connection in which the word is used greatly modifies its accepted meaning. During the several years that I have applied it in that way it has served me a good purpose. As differently spelled, (Pharmacie,) it serves the whole French nation for the same use, and I believe if it were generally adopted it would be like some other things we have borrowed from France, an improvement.—*Proc. Am. Pharm. Association*, 1866.

ON THE PREPARATION OF PURE SILVER.

By Professor J. S. Stas.

(Concluded from page 168.)

Second Method.—This method furnishes it easily and more promptly than any other known way; it has the special advantage of giving it in a state of rare purity. I will describe it in detail, as I am convinced that it would be useful in laboratories and in the workshops of the Mint for the preparation of assay metal or *standard* silver.

It is based upon the *complete* reduction which ammoniacal solutions of silver compounds undergo when added to ammoniacal

cuprous sulphite, or to a mixture of sulphite of ammonium and any ammoniacal salt of copper.

At the ordinary temperature this reduction takes place slowly with deposition of black, blue, or grey silver, according to the dilution of the liquids. Above a temperature of 60° *C. the reduction is almost instantaneous, and the silver is precipitated in a state of division corresponding to the dilution of the liquid; its colour varying from grey to pure white.*

This is how I prepared silver by this method.

Silver coin is dissolved in dilute and boiling nitric acid; the solution of nitrate of silver and of copper is evaporated to dryness, and the saline mass fused. This fusion is necessary to destroy the *nitrate of platinum, which is often formed in dissolving silver coin.**

After coolimg, the nitrates are taken up by an excess of ammoniacal water. The ammoniacal solution is left to rest *for fortg-eight hours.* The limpid liquid is filtered through a double filter of paper, and then diluted with distilled water until it contains no more than *two per cent.* of its weight of silver.

I procured neutral sulphite of ammonium by mixing ammonia with sulphurous acid. To ascertain the quantity of sulphite required for the complete precipitation of the silver from the ammoniacal solution of nitrate of silver and copper, I heated to the boiling point a definite volume of solution of sulphite of ammonium, and I found the volume of the solution of silver and copper which was decolorized by this salt. Experiment has, in fact, proved to me that so soon as the sulphite of ammonium, *sufficiently heated*, is not colored blue by the cupric oxide dissolved in the ammonia, there remains no trace of silver dissolved in the liquid, because in this case all the copper exists in the cuprous state, the presence of which is incompatible with that of any compound of silver dissolved in ammonia.

The quantity of sulphite of ammonium necessary for the precipitation of the liquid having been determined, I added it to the argentiferous solution, and after being well mixed, it was left to itself for forty-eight hours in a closed glass flask, to prevent the

* I have found by several trials that French silver contains iron, nickel, and traces of cobalt, platinum and gold.

contact of the air. At the end of this time about a third of the silver was reduced at the ordinary temperature, and was precipitated in the form of a shower of crystallized silver, of a greyish-white color, and very brilliant.

I then put the decanted blue liquid, in quantities of ten litres at a time, in a water-bath at a temperature of from 60° to 70°. The time required to cause the elevation of temperature was quite sufficient for the complete reduction of the silver in solution, and for the reduction of the cupric sulphite to the state of cuprous sulphite;* especially as I was careful to take a sufficient excess of solution of sulphite of ammonium.

The silver being eliminated, I decanted the liquid when cold, and proceeded to wash separately the silver precipitated from the cold and the warm solutions. This washing was performed by decantation with ammoniacal water; it was continued as long as the washing waters were perceptibly colored blue by exposure to air, or precipitated chloride of barium. I afterwards left the silver for several days in concentrated ammonia, and then washed it in pure water.

If the solution from which the silver is precipitated has been diluted until it contains no more than 2 *per cent. of silver, the ammonia left in contact with this metal is not colored even after several days' digestion.* There is no longer any copper for the ammonia to dissolve; it *dissolves silver* instead, for this metal is feebly attacked by the alkali under the influence of air, as it is easily proved by evaporating liquid ammonia which has remained several days in contact with turnings of pure silver. This liquid always leaves a black shining mirror of nitride of silver by its spontaneous evaporation.

I prepared silver by this method at four different times, and in the last I operated upon 2500 grammes of silver at once. I have proved that by fulfilling all the conditions I have described, and *especially by carrying the dilution of the ammoniacal solution of the nitrates of silver and copper* to 2 per cent. of silver, we

* The liquid in which the reaction takes place becomes quite colorless if the copper contains neither nickel nor cobalt. If it contains nickel, it takes a slight green tint; it takes, on the other hand, a reddish tinge if there is cobalt in the dissolved metal.

obtain silver of a rare purity. When it was wanted to form the precipitated silver into bars, I fused it with 5 per cent. of its weight of calcined borax containing 10 per cent. of nitrate of sodium, as I mentioned in the case of the silver reduced from the chloride by potassa and sugar of milk. I have also fused large quantities with the aerhydrogen blowpipe in a crucible of pure procelain, or in an oxyhydrogen gas furnace in crucibles of marble lime.—*From Memoirs af the Royal Belgian Academy in London Chem. News, Feb.* 1, 1867.

ON THE EMPLOYMENT OF NARCEINE.

By Dr. Eulenberg.

The following is translated in abstract from the "Répertoire de Pharmacie."

The doses of Narceine commonly employed by Dr. Eulenburg for *internal use* were from $\frac{1}{6}$th to $\frac{1}{2}$ a grain; and for *hypodermic use* fron $\frac{1}{8}$th to $\frac{1}{4}$th of a grain. With healthy persons these doses are generally followed by a slight narcotic effect, without any accompanying disagreeable subjective symptom, such as headache or gastric derangement. When used hypodermically it produced a sensation of burning at the place of puncture, but of little intensity and duration, a sensation in every case less evident than that caused by every other alkaloid (morphia, quinia, etc.) It never had any irritant effect; but in patients with sensitive skins, when the injection was made on the face, it produced an œdematous swelling without redness at the place of puncture, which disappeared in from one to two days, leaving a somewhat sensitive and limited induration. Such an effect has nothing in it of a peculiar nature, as it has been noticed after the injection of other alkaloids, as morphia, for example.

Among the physiological effects of narceine which accompany the narcotism is its action on the circulation; this consists principally (contrary to the action of atropia) in a diminution of the pulse, succeeded some time after by an acceleration. In rare cases, the pulse is accelerated during its employment by twelve to sixteen strokes in a minute. Its action on the cutaneous

nervous system appears to resemble that of other narcotics, and produces its effects directly when used hypodermically, and indirectly, by acting on the centres, when given internally. The repeated use of internal doses often produces from one to two stools, sometimes even diarrhœa. On the other hand, it appears to retard the appearance of the menses. M. Eulenburg concludes that, for sedative and hypnotic effects, narceine is preferable to every other substance. Besides its employment in some essentially neuralgic affections, its use is indicated in all cases where pain is a prominent symptom, as in articular affections, phlegmons, ocular lesions, (iritis, keratitis, etc.), orchitis, blennorrhagic epididymitis, cystitis cirrhosis of the liver, and in wounds, or after painful operations. In all these cases, narceine, when employed either internally or externally in the doses before mentioned, rapidly lessens the pain, and often produces a sleep of four, five, and even nine hours,—sleep which is soft, tranquil, uninterrupted, and followed by a quiet awaking. These doses never give rise to any derangements or any poisonous effects. Although, by the use of morphia, in numerous cases we obtain the same effects, it often fails; many diseases (especially among women) present, in fact, a kind of idiosyncrasy which renders the employment of morphia impossible; thus, by its internal use vomiting is produced, or else the medicine causes, instead of a refreshing sleep, a state of great excitement, with distressing dreams, delirium, and convulsions; while, in some other diseases, morphia, without appreciable cause, produces only a very slight effect, or one of very short duration. The hypodermic employment of morphia renders it more active and more trustworthy, but it increases in a like degree all the inconveniences, and often gives rise to cephalalgia, faintings, vomitings, or profound collapse; often the sleep is very prolonged (according to Semeleder, fifty-four hours); and sometimes the effects of morphia are prolonged even for some days after the awaking.

Narceine, as an anodyne and narcotic, may be always employed in place of morphia, and is in every respect equal to it in value, and even in a great many cases is to be preferred to it.

M. Eulenberg has not as yet had many opportunities of em-

ploying narceine in hemicrania, supra-orbital, trifacial, and crural neuralgias, but every time it was tried it produced a rapid cure. In hemicrania $\frac{1}{8}$th of a grain taken at the commencement of the attack, produced a sleep of several hours, followed by an awaking in perfect health.—*London Pharm. Journ., Feb.*, 1867.

ON THE PREPARATION OF MEDICAL TINCTURES.

By M. Filhol.

The various writers on the preparation of medical tinctures have given most of their attention to the best method of exhausting substances submitted to the action of a solvent (alcohol, ether, &c.). Two methods have been proposed. The first consists in macerating the substances properly divided for a sufficient time in the liquid which is to produce the tincture, and filtering and submitting the residue to sufficient pressure to extract the portion of tincture it retains. The second, known as the displacement method, consists in submitting the substance destined to undergo the action of a solvent to a methodical washing and displacing the tincture remaining in the powder by water, or by alcohol when an alcoholic tincture is desired.

It is generally admitted that the latter method produces in a very short time a tincture quite as rich, sometimes even richer, in soluble material than that obtained from the same substances by prolonged maceration. But it is undeniable that those prepared by maceration keep better, and are less apt to become turbid, than those prepared by the second method. On the other hand, it seems impossible to displace alcohol by water, for the two liquids mix in an appreciable manner, and little economy can result from this plan. The maceration process seems then to be the best.

I will not here enter into all that has been said for and against each of these methods, but will merely observe that the question does not appear to me to have been hitherto sudied in a manner which is alone calculated to remove all doubts.

It would, in fact, be of little consequence that tinctures prepared by the displacement method should, after a few days, furnish a slight deposit, were it proved that the substance form-

ing this deposit was inert, and that its preparation did not lessen the value of the medicine. It would be quite the reverse were this deposit formed essentially of principles possessing great activity. This, then, is a point which it was necessary should be cleared up by a series of consistent researches and qualitative analysis, executed with all possible care and precision.

It is important, also, in estimating the value of the tinctures, not to rely solely on their relative densities, or on the quantity of dry residue left by evaporation, but rather on the results of the analyses of these residues, for it sometimes happens that the best tincture gives the least residue, being richer in alkaloids and other really active principles than those giving the smaller quantity of residue. I am aware that the researches I have indicated would require much time and skill on the part of the operator, but there are many druggists capable of successfully undertaking them.

One word more concerning tinctures.

In my opinion, alcohol is not so good a preservative as it is generally supposed to be, and the tinctures should be used as soon as possible after they are prepared. The following facts prove that certain immediate principles of vegetable origin alter when dissolved in alcohol.

A tincture prepared from the leaves of a plant will be of a beautiful green color, due to the presence of chlorophyl, and will, under the influence of hydro-chloric acid, undergo transformations, which M. Frémy has described, and which I have studied myself. Now, these transformations do not take place in a tincture which has been prepared for several months, and the most essential characteristics of chlorophyl disappear.

The petals of the ranunculus, macerated in alcohol, give a golden yellow tincture, which, on the addition of an equal volume of hydrochloric acid, turns green. After the liquid has been filtered, a yellow substance remains on the paper, and the filtered liquid is of a pure blue colour. Nothing of this kind takes place when the tincture has been kept some time. Then the liquid remains yellow in spite of the addition of hydrocholoric acid. In this case the xanthine of the flowers has been altered, as well as the chlorophyl.

Attentive study will probably lead to the discovery that other matters also undergo great alteration.

Now it is certain that tinctures, possessing all the properties I have mentioned, can be prepared from leaves or flowers well dried and kept from air and light for several months. It is therefore better to preserve the plants than the tinctures, and the latter should, as I have said, be prepared in small quantities, and used as fresh as possible.—*From Journal de Pharmacie de Chimie*, vol. iv., p. 22.—*London Chem. News, Feb.* 8, '67.

ON THE EXAMINATION OF DIABETIC URINE; NEW REAGENT FOR GLUCOSE.

By L. B. Francqui and L. Vande Vyvere.

After noticing the several reagents used, and pointing out their special inconveniences, the authors propose a solution containing oxide of bismuth as being free from these defects. "We have found," they say, "that hydrate of bismuth dissolves in caustic potash, under the influence of certain organic bodies, such as glucose, cane-sugar, dextrine, tartaric acid, &c." These solutions do not form a precipitate on boiling, except in the case of glucose.

Guided by these results, we are induced to recommend, for the detection of glucose in urine, the following process, which cannot give rise to any fallacy:—

Prepare the reagent by precipitating a solution of acid nitrate of bismuth by a great excess of caustic potash, and pour a solution, drop by drop, into the moderately heated solution until the precipitated hydrate of bismuth is completely redissolved.

To recognize a diabetic urine, heat a portion with the above solution.

After a few minutes' ebullition, the urine becomes brown, and metallic bismuth is then precipitated in the form of a black powder of crystalline appearance, adherent to the glass, if glucose is present.

We have satisfied ourselves that the principles contained in normal urine, such as urea and uric acid, do not precipitate the above reagent. Albumen only causes a brown color and a slight

turbidity, which we consider to be due to the formation of sulphide of bismuth.

Sulphuretted urines also give a black precipitate in a solution of oxide of bismuth in potash and tartaric acid; but this reaction cannot be confounded with that caused by glucose.

It is, besides, easy to recognize and (if desired) to separate the albumen. Thus, on bringing to ebullition the urine of a person suffering from Bright's disease, the liquid becomes turbid, opalescent, and deposits coagulated albumen.

As to sulphides and sulphuretted hydrogen, these are easily recognized by means of hydrate of lead, which these compounds darken.—*London Chem. News, Feb.* 15, 1867, from *Gazette Médicale.*

POISONING BY STRYCHNIA; CANNABIS INDICA.

In a recent number, we reported in our periscopic department a case of recovery from strychnia poisoning by means of chloroform. We now add another, which recovered under the use of *Cannabis indica*, and tr. of camphor. The case occurred in the practice of Dr. S. A. McWILLIAMS, of Chicago, by whom it is reported in the *Med. Examiner.* Patient, 31 years of age, took, suicidally, 5 grains of strychnia. Was seen by Dr. McW. 3¾ hours afterwards, when he had extensive frequent and severe spasms, and with each a blowing of froth from the mouth. He lay upon his back, arms extending obliquely from his body; face flushed; perspiration rolling off him; pupils dilated widely; pulse 130 per minute; color of lips natural; stiffness of muscles and inability to move limbs; mind perfectly clear. A drachm of the tincture of cannabis indica was immediately given, and another in five minutes; then two similar doses at intervals of ten minutes; afterwards two such doses at fifteen minutes interval with a rapid amelioration of symptoms; the next drachm was given in an hour and a half. The remedy, which afterwards was alternated with camphor, was continued as the urgency of the symptoms demanded, and the patient recovered, with uninterrupted convalescence, after 48 hours.—*Med. and Surg. Reporter, Philada. February* 2, 1867.

STANDARD THERMOMETERS.

To the Editor of the CHEMICAL NEWS:

Sir,—As the question touched upon by your correspondent, "Zero," about standard thermometers is of considerable importance on account of the comparison of accurate thermometric observations—as, for example, those suggested by Drs. Compton and Aitkins for the careful observations of the temperature of the human body during disease—I venture a few words on the point.

In your article it is stated that Mr. H. C. Kay's instrument, as certified by Mr. Glaisher, differs $1\frac{1}{2}°$ from the instrument with a Kew certificate. This statement implies at once that there are either two standards in England, that of Kew and that of Greenwich, differing $1\frac{1}{2}°$ from each other, or that Mr. Glaisher must have made a mistake of $1\frac{1}{2}°$ by the comparison of this instrument. Now neither of these suppositions is probable, for it is not likely that the standards at Kew and Greenwich should differ to any measurable unknown amount, nor is it likely that a man like Mr. Glaisher would make such a mistake. It is, therefore, evident that we must otherwise account for this difference. I applied to Mr. F. Pastorelli, of 208 Piccadilly, one of the most careful and accurate manufacturers, for an explanation, which he was kind enough to give me at once. Mr. Pastorelli informed me that it was a fact, known to most practical and accurate manufacturers, that thermometers made in the usual way did acquire gradually an increasing index error which would reach the maximum of 1 to 2 degrees about a year after the manufacture, but remain then as good as constant. Mr. Pastorelli believes this increasing error to be owing to the contraction of the glass after its manufacture. He explained to me a process he followed to avoid this after-contraction as much as possible, but this I shall pass over as being merely important to manufacturers.

After the above explanation it is, therefore, very probable that Mr. Kay's instrument acquired this greater additional index error first after its comparison by Mr. Glaisher with the standard. But how have we to account for it that the instruments with the

Kew certificates should not have acquired the same increased error? This may be that those instruments were originally more carefully made, or adjusted some time after their manufacture. But if such considerable errors are possible even in certified thermometers, it would perhaps be advisable to place at different easily accessible localities standard instruments which are carefully rectified, to enable any gentleman engaged in meteorological, medical, chemical, or other thermometric observations, to convince himself of the correctness of his instrument, so that an accurate comparison of different observers can easily be made.

I am, &c.,

A SUBSCRIBER.

—*London Chem. News, Feb.* 22, 1867.

THE MANUFACTURE OF SALT.

Our attention has been called to the following extract from a work entitled, "The Resources, Products, and Industrial History of Birmingham and the Midland Hardware District," 1866. Mr. Samuel Timmins is editor, but the name of the author of the chapter on salt is not given.

When factory and other operatives receive so much legislative attention, it is only fair to remember these neglected saltmakers of Worcestershire.

Solution and crystallization are so interesting to chemists that we think it probable that mention of this subject in the CHEMICAL NEWS will bring a large amount of attention.

"The social condition of the saltworkers has for centuries been, and in most cases continues to be, a reproach to English civilization. The heat of the stoves and pan houses in which they work, and which frequently better deserve the name of their homes than the miserable hovels in which they huddle out of working hours, renders more than a minimum of clothing unnecessary, if not burdensome, and even this minimum is not unfrequently dispensed with by both sexes. The work is necessarily continuous day and night, and from Monday morning to Saturday evening it often happens that the laborer never quits the precinct of the works, snatching his intervals of rest beside the pans. Men and

women, boys and girls, are thus exposed to more than all the debasing and demoralizing influences which haunt the worst dwellings of our agricultural laborers, without a single antagonistic agency to prevent their lapse into the lowest depths of brutish immorality. The social condition of the saltworkers has consequently been, and probably still is, more abjectly degraded than that of any other class equally numerous, although their poverty is by no means so depressing. With scarcely an exception, wherever salt manufactures on a large scale have existed, the population employed in them has been the disgrace and pollution of the neighborhood, a community almost unapproachable by philanthropy and irreclaimable by religion. Happily we are able to record the dawn of better days in the district nearest to Birmingham.

"It is now eight years since the employment of women at the Stoke Works was entirely discontinued by the proprietor, John Corbett, Esq., and although the full result of the measure will not be felt until a new generation has arisen, it has already acted on the habits and condition of the workpeople in such a manner as to produce a social revolution in the neighborhood. Marriage, an institution previously almost ignored, has, in a great measure, superseded the indiscriminate concubinage resulting from the former conditions of labor; the dwellings of the workpeople, now continuously occupied, have very perceptibly improved; and if the condition of the saltworker, from a social and moral point of view, is still greatly lower than that of the average artisan, it is far higher than it ever has been, or, indeed, could be, under the old system. The reformation thus effected has also been materially aided by an alteration in the arrangement of the work introduced about five years ago. Formerly, one man only was usually appointed to take charge of each pan both by day and night, and was paid at the rate of 1s. 10½d. per ton of salt manufactured. In place of this system, what is termed 'shift work' is now universally adopted at the Stoke Works. Two men, one for the day and one for the night, are appointed to each pan, and receive 2s. per ton proportionally divided between them, the higher rate of payment being compensated by the additional amount manufactured under the new system. Three assistants

are required to each pan, who are paid by the men in charge of it out of their receipts for the salt manufactured. Much of the work can be done by boys and girls, and a father, by taking his children as his assistants, could make a considerable addition to his wages. A strong inducement is thus held out to parents to employ their children in such a manner as wholly to preclude their chance of obtaining any education, although at Stoke the inducement no longer exists in the case of girls. All the work is paid by the piece, and even in processes apparently so simple, an amount of judgment, experience, tact, and dexterity is required which makes a wide difference between the wages of a good and a bad workman. A fair workman, on an average, at 2s. per ton, can, it is calculated, make about 28s. per week. Each head of a pan is paid 22s. weekly on account, and the balance is settled monthly, the work being appraised by the foreman of the salt works, who rejects or reduces the allowance for work in any way faulty or imperfect. About 500 hands are employed at Stoke Works, and the average amount of salt of all kinds manufactured is about 3000 tons per week, with a consumption of from 1500 to 2000 tons of fuel.

"Previous to 1823, when the duty on salt, then as high as 15s. per bushel, was repealed, the entire annual produce of Droitwich did not amount to more than 9000 tons, the entire produce of Worcestershire being now about 200,000 tons per annum. The Cheshire salt works are capable of producing 1,000,000 tons per annum, but the supply being immensely in excess of the demand, many works are always standing still, both in the Cheshire and Worcestershire districts. The export trade of Worcestershire is about 50,000 tons annually; that of Cheshire about 650,000 tons.

"The price of salt for many years has ranged within very narrow limits. Monthly meetings are held by the manufacturers, as in other trades, and arrangements are made as to the rate of wages, the prices to be charged, and other matters affecting their common interests. The number of 'small masters' in the trade, however, renders any effective combination among the manufacturers as difficult as the introduction of any substantial reform in the habits and condition of the workpeople. A large portion

of the trade in the aggregate at Droitwich is in the hands of such masters, who, not possessed of sufficient capital to undertake the manufacture on a scale large enough to permit the adoption of expensive improvements in machinery, or in the system of working and payment of wages, are still able, by employing their own family as workpeople, to produce salt at a rate so low as to render it difficult for those able to initiate the necessary reforms to realize an adequate remuneration from them. On the whole, therefore, although the experiment tried at Stoke has, we believe, been commercially as well as socially successful, and must in the long run materially affect the condition of the saltworkers, there is but little immediate prospect of their making any great general advance in the social scale. For the present the public is able to purchase salt at a price possibly lower by some infinitesimal fraction than it would be if the manufacture were entirely in the hands of large proprietors and the employment of women and children strictly prohibited; but the advantage is dearly purchased by the continued existence amongst us of a class of laborers which ranks below that even of the working colliers."—*London Chem. News, Feb.* 22, 1867.

VIBURNUM PRUNIFOLIUM IN THE TREATMENT OF THREATENED ABORTION.

By D. L. Phares, A. M., M. D., of Newtonia, Miss.

This small tree grows in rich, dry woodlands from Florida to the Mississippi river, and northward. For description, see Chapman's "Flora of the Southern United States," and other works. The part used is the bark, ʒ ss to ʒ i, in powder; infusion f ʒ ss; or saturated tincture f ʒ i.

It is nervine, antispasmodic, tonic, astringent, diuretic, and may be used to very good purpose in urinary affections, ophthalmia, apthous sore mouth, chronic diarrhœa, dysentery, indolent ulcers, etc. It is an excellent remedy in colic, cramp, spasms, palpitation, and other affections incident to pregnancy, or arising from uterine disorder, and for after pains. But it is particularly valuable in preventing abortion and miscarriage, whether habitual

or otherwise—whether threatened from accidental cause or criminal drugging.

It tones up the system, preventing or removing those harassing nervous symptoms that so often torment, wear down, and disqualify the pregnant woman for the parturient effort. It enables the system to resist the deleterious influences of drugs, so often used for the purpose of procuring abortion. It is well known that the inner bark of the cotton root is used by many to induce miscarriage—one pint of the strong decoction being sufficient for this purpose. The regular exhibition of the viburnum completely neutralizes the effect of the gossypium, compelling the delinquent mother, however unwilling, to carry the fœtus to full term. Some farmers, on whose plantation I have used this medicine, and who have seen much of its effects on negro women who always managed to miscarry, declare their belief that no women can possibly abort, if compelled to use the viburnum. This may be claiming too much for it; but it has certainly prevented abortion in every case in which I have ordered it for the purpose. Negatively, miscarriage has never taken place, so far as I am informed, in any case in which this medicine was used as a preventive.

[We omit the cases adduced to support the views of Dr. P., but may remark that they appear to be favorable to the value of the viburnum.—Ed. Am. Jour. Pharm.]

I have heretofore, for some years past, made known the use of this valuable agent, in conversations with members of the profession, as well as by letter. Its value as a medicine is so well ascertained as to justify a lengthy article in print, and its general use by the medical profession. The bark may be gathered at any time, but is best, perhaps, gathered in October and November. When practicable, I have preferred obtaining it from trees in open, exposed situations. Situation materially affects the qualities of plants. A plant, for instance, which, gathered on the level of New Orleans, is inert; gathered here, is probably the best remedy in the world for tetanus; of which more another time.—*Southern Jour. of Med. Sciences, February*, 1867, from *Atlanta Medical and Surgical Journal.*

ON CONIFERINE, A GLUCOSIDE CONTAINED IN THE CAMBIUM OF THE CONIFERÆ.

By M. W. Kubel.

This substance, analogous to Salicine, was discovered by M. Hartig in the "cambium" of several coniferous trees, *Abies excelsa*, *Abies pectinata*, *Pinus Strobus*, *P. Cembra*, *Larix Europæa;* it probably exists also in other species. From its origin the name of Coniferine was given to it by M. Hartig, who left the chemical study of it to the author.

The "cambium" is collected by scraping the surface of the wood recently deprived of its bark, and pressing the mass thus obtained; the thick juice is boiled to coagulate the albuminous matters it contains, which coagulum encloses the cells, the amylaceous matter, etc.; the filtered liquid is then clear, of a sweetish bitter taste; by evaporation to one-fifth of its volume, it deposits a large quantity of Coniferine in acicular crystals. The syrupy liquor which accompanies them possesses a very sweet taste, and contains a sugar closely allied to cane sugar. The crystals of Coniferine are re-dissolved in water, decolorized by animal charcoal, and finally crystallized from weak alcohol.

Pure Coniferine forms slender needles of a silky lustre, containing water of crystallization, which is lost at 100° C.; they are efflorescent. It melts at 185° C.; at a higher temperature it turns brown, and ultimately carbonizes, evolving an odor of burnt sugar. Its composition corresponds to the formula,

$$C_{24}H_{32}O_{12}, 3H_2O.$$

It is but slightly soluble in cold water, which dissolves only 0·51 per cent., but boiling water dissolves it with facility, absolute alcohol scarcely at all, and it is quite insoluble in ether.

The aqueous solution has a slightly bitter taste, it deviates the plane of polarization to the *left*, it precipitates neither acetate nor sub-acetate of lead, and gives no coloration with ferri chloride. Boiled with weak sulphuric or hydrochloric acid, it turns thick owing to the separation of a resinous substance of a slightly bluish color, emitting, at the same time, an odor of vanilla. The precipitate darkens in color by drying; it dissolves in soda, forming a yellowish solution, from which it is again thrown down by acids; heated, it evolves a very aromatic color. The liquor

filtered from this precipitate is *dextro*-rotatory and contains sugar, the presence of which may be recognized by cupro-potassic tartrate.

Coniferine presents a characteristic reaction. Whilst Salicine is turned red by concentrated sulphuric acid, Coniferine turns a deep violet; on adding afterwards a little water, a precipitate is formed, which colors the liquid a deep indigo blue, and which is probably the same substance as mentioned above.

Cold hydrochloric acid dissolves Coniferine without change of color, but if the solution formed is heated and evaporated, the same indigo-blue precipitate is formed.

Sulphuric acid is a good reagent for recognizing this substance. It is sufficient to touch a fresh-made cut in a tree of the family Coniferæ, in order to ascertain the presence of Coniferine.—*London Pharm. Journ., February*, 1867, from *Journal f. Prakt. Chemie*, t. xcvii. p. 243.

ON THE YELLOW AMORPHOUS OXIDE OF MERCURY AND ITS APPLICATION IN CONJUNCTIVITIS AND CORNEITIS PHLYCTENULOSA.

By Dr. Pagenstecher, Wiesbaden.

Red precipitate, the red oxide of mercury, has hitherto played an important part in the treatment of the superficial diseases of the eye, and in many instances constitutes the basis of several secret popular remedies. It is especially used in various kinds of blepharitis, in the form of an ointment, and valued by every oculist as a very favorite remedy. In diseases of the conjunctiva, and cornea too, when the object of the surgeon was to produce a stimulant or alterative effect, we find in the "Pharmacopœia" several compound ointments of this description recommended. But these ointments mostly possess the disadvantage of being inapplicable to all these forms of disease, and especially so to conjunctivitis and corneitis phlyctenulosa, being often found to irritate too much. Numerous and prolonged trials that I instituted years ago, proved to me that the red precipitate in ordinary use was, from its crystalline form, not sufficiently finely divided, and consequently did not act uniformly on the surface of the diseased membranes; very often, too, got retained in the

folds of the mucous membrane, and there set up a caustic action, which was rather prejudicial than otherwise to the subsidence of the disease. I became positive of this fact from some experiments I instituted with this substance, which was first reduced by many hours' trituration to as fine a powder as possible, using, as a vehicle, fat, which melted quickly from the natural warmth of the conjunctiva. Thus the remedy was, by the movements of the lids, equally distributed over the diseased surface; and at the same time, the probability, or rather the possibility, was avoided of any irritation being produced by its remaining too long in the conjunctival sac. Even these experiments yielded by far more favorable results. But the ointment was rendered still more perfect when I, acting under the advice of Dr. Hoffmann, substituted the yellow amorphous oxide of mercury. This preparation, which up to that time (1856) had found no place in the pharmacopœia, but, as well known to chemists, possesses the great advantage of being in a state of the finest possible division, prepared, as it is, by precipitation; and being altogether destitute of any crystalline form, it does not, like the red precipitate, adhere to the conjunctival tissue by any fine points and angles. But this preparation differs materially not only in form, from those which have hitherto been employed, but also in its chemical properties, which explain and render intelligible the results obtained in practice. I may be permitted to give the preparation of the ointment in Dr. Hoffmann's own words:—

"Two forms of oxide of mercury are recognized:—

1st. The crystalline or red oxide, prepared by the dry method, and commonly known as red precipitate, constituting the very common remedy; and

2d. The amorphous, or yellow oxide, prepared by the wet method by precipitation; up to within a few years unknown to the pharmacopœia, although it is indubitably preferable to the first.

The common red precipitate is rendered applicable to practice by being triturated in a porcelain mortar till no more brilliant crystalline points can be perceived: a powder is thus obtained, which is quite soft, and when rubbed between the fingers no longer imparts any gritty feel. If this, after being prepared in

the most careful possible way, is submitted to the microscope, it may, under a magnifying power of even 120 diameters, be recognized as a mass of broken crystals. The point up to which the trituration should be continued, which forms the measure of the fineness of the division, is in this method uncertain and inconstant. Thus this preparation occurs in different degrees of fineness in different shops; and as its efficacy is intimately connected with its fineness, the surgeon gets preparations which act with unequal strength.

For obtaining, therefore, a preparation uniform in its effects, and in the finest possible state of division, the yellow precipitatate, which is thrown down, is highly to be recommended. Thinking this would also prove a far more energetic preparation, I, in 1856 for the first time, prepared some, and recommended its use to Dr. Pagenstecher in his eye-practice, instead of the common precipitate, and found my anticipation most gratifyingly confirmed. The mode of preparing the yellow precipitate, although well known, may be still worth mentioning. Care must be taken in the precipitation to obtain a pure oxide, and not any of its compounds, to which precipitates of mercury have a great tendency—a fact which might detract from the efficacy of the preparation. The precipitation is effected by adding a solution of the chloride of mercury to a solution of potash, in such a way that there is always an excess of the latter. After the precipitate has deposited itself, the supernatant fluid is at once poured off, the precipitate thoroughly washed with distilled water, and dried by a gentle heat, with exclusion of daylight. Thus prepared, the yellow precipitate has a light-yellow (that of the yolk of egg) color, and is an exceedingly fine powder, which, even under the microscope, appears completely amorphous. In addition to both the above signalized properties, it differs from the ordinary precipitate in its chemical behaviour, being much more quickly acted on by reagents. A solution of oxalic acid, which acts on the red oxide only after boiling, very quickly changes the yellow oxide, even at the ordinary temperature, into the white oxalate. The preparation of hypochloric acid gas depends on the property the yellow oxide of mercury possesses of decomposing in contact with chlorine gas; the results being hypochloric

acid and chloride of mercury; whereas the red oxide undergoes, with chlorine gas at the ordinary temperature, hardly any change. This difference of chemical behaviour of the two oxides constitutes a different degree of resistance to the various agents they are submitted to, and is explained by their different states of cohesion. In respect to the use of the yellow precipitate for eye-ointments, I may be allowed to say a few words on the vehicle of the ointment. The most perfect vehicle for an eye-ointment must be very soft, without, however, being too fluid, lest the heavy oxide sink to the bottom; but when in contact with a moderate heat of the body, it must completely melt, so that the preparation it contains may become quickly and uniformly diffused over the eye. Besides this peculiarity of consistence, the vehicle must be, as far as possible, indifferent in its behaviour to the oxide, and exhibit the least possible tendency to rancidity, which might exert a deoxidizing, reducing action on the oxide. Numerous experiments with hog's lard, butter, glycerine, glycerine ointment, and mixed fats, have led me to give the preference to the last; and I recommend either the mixture of spermaceti, wax, almond-oil, and rose-water, known as 'cold cream,' only omitting the water, as this favors rancidity, and substituting for it quantities of almond-oil, varying according to the heat of the weather; or a mixture of butter, of cocoa, and almond-oil, likewise proportionate to the temperature. In both compounds the almond-oil must be as fresh as possible, and had best be prepared by the apothecary himself."*—*Braithwaite's Retrospect, January*, 1866.

* As regards the strength of the ointment, I generally use one drachm of oxide to one ounce of fat. This may appear very strong to some, but experience amply shows that, applied in proper cases, it does not in any way irritate too much. Idiosyncrasies may, of course, be observed, as in every remedy; and if the ointment in a given case irritates to much, its strength may be reduced to 30 grs. of oxide to the ounce. I may further remark, the two constituents of the ointment must be rubbed up to a most intimate admixture, if it is to act well. The following are, then, the two formulæ:—

℞. Hydrarg. oxydat. flavi, gr. xxx. (via humida parati). Ung. cetacei, ℥ ss. Misce exactissime et fiat unguent.; or.

℞. Hydrarg. oxydat. flavi, gr. xxx. (via humida parati). Ung. cetacei, ℥j. M. exactiss. et fiat ungent.

THE PREPARATIONS OF CONIUM MACULATUM OF THE BRITISH PHARMACOPŒIA, 1864.

By John Harley, M. D., Lond., F.L.S.,

(Assistant Physician to King's College Hospital, and to the London Fever Hospital, etc.)

In furnishing four preparations,—poultice, juice, tincture, and extract,—the *Conium maculatum* occupies a prominent position in the British Pharmacopœia. Yet, perhaps, there is no plant in any Materia Medica of whose medicinal value we have less assurance than that of Hemlock. It is commonly reputed to be a very poisonous plant, and medical practitioners of the present day partake of this opinion, and prescribe it in very small doses.

The object of my inquiries is to ascertain how far this impression is correct, and at the same time to determine the medicinal value of its preparation more accurately than has yet been done.

I have occasionally prescribed the extract and tincture of the London Pharmacopœia in much larger doses than are usually given, but without effect. Negative results have been too uni formly present to allow me to attribute them, in every case, to carelessness in the manufacture or preservation of the particular drug used; and a very old impression that the potency of the plant is greatly exaggerated, has, for several years past, gained strength in my mind. Wishing to give the officinal preparations fair trial, I have long waited for an opportunity of getting the fresh, well-grown plant in its proper season, so that I might have a sound basis for my experiments.

On mentioning the subject to Mr. Hemingway, the distinguished pharmaceutical chemist, of Portman Street, Portman Square, he has most kindly relieved me of my chief difficulty, and while he has given me the benefit of a most cordial interest in the matter, he has provided me with most reliable means for conducting my experiments. The first object of my inquiries has been the—

Tinctura Conii fructûs.—The tincture with which the following observations were made, was most carefully prepared by Mr. Hemingway, in the early part of November last, under my own inspection. In investigations of this kind it is of fundamental

importance to ascertain the characters of the materials employed and the processes adopted. I shall not scruple, therefore, to enter into a somewhat minute description of them.

Preparation of the Tincture.—Two ounces and a half of the powdered fruit, mixed with fine sand, in order to separate the vegetable particles, and bring the spirit into more ready contact with them, were packed in the percolator, with a layer of sand above and below, the lower aperture of the percolator being closed with a piece of wash-leather. The fruit was then exhausted by the passage, drop by drop, and at a temperature of 62° F. of ℥xx of proof spirit. The percolation was preceded and occasionally interrupted by maceration,—the one process being substituted for the other by a slight rotation of the stopper. The supernatant spirit was preserved perfectly colorless by the upper layer of sand during the whole of the time, and thus fresh portions of pure spirit were constantly brought into contact with the separated fragments of the fruit. It is obvious that no more perfect process of exhaustion than this can be devised. It is one which Mr. Hemingway tells me he has constantly adopted in the preparation of tinctures, and it certainly appears desirable that such a thoroughly practical, cleanly, and effectual process should be universally prescribed for the preparation of this and similar pharmaceutical products.

The fruit used was a fine specimen, and probably of this year's growth. It was clean, and free from admixture with other umbelliferous fruits. The albumen was firm and solid, the commissure convex, the groove indicating the involution of the albumen broad and deep, and the crenations of the ridges well formed—all of which I take to be essential characters of a well matured fruit. My friend Professor Bentley has also examined the fruit and pronounced it mature and good. The powder was prepared by means of a fineish hair sieve, and *without the application of heat.* It evolved a strong heavy mousy odor.

When 14 ounces of the spirit had percolated, I collected f ʒss in a watch-glass, and allowed it to evaporate spontaneously. Only a slight yellowish-brown film of varnish remained upon the glass. The last six ounces of spirit came through colorless.

Mr. Hemingway exposed *the marc* to powerful pressure, and

obtained about two ounces of colorless spirit rendered turbid by a little greyish feculent matter. On examining this fluid, I found that it contained minute spherules of a colorless fixed oil. After exposure to the light for a few days the oil assumed a bright sap-green color. The whole was evaporated to dryness over a water-bath, and the oil separated from a minute portion of brown residue, by means of ether. *This fixed oil* was of an emerald-green color, and possessed an odor resembling that of boiled linseed oil, and a nauseous rancid and bitter taste. It weighed 2 grains. I applied to the eye, and swallowed a drop of it without any result. Its specific gravity was less than that of proof spirit (0·920).

The following are the *characters of the tincture*:—Reaction slightly acid, color light greenish-brown with an internal opalescence, a strong mousy odor. A mixture of f ʒss of the tincture and f ℥j of water was nearly colorless, but after exposure to light and air for twenty-four hours, it had assumed a leaf-green color. This change is probably characteristic and depending upon a resinous matter allied to the green oil above described. It is no doubt one of a similar nature to that which affects guaiacum resin, but unlike this substance, neither the tincture nor the oil were rendered blue on exposure to protoxide of nitrogen.

In order to ascertain the physiological effects of the tincture, I selected two individuals,—a weakly emaciated woman, M. A. R—h, aged thirty-seven, and myself.

I began, November 11th, by taking f ʒss, and increased the dose f ʒss each day for seven succeeding days, so that on November 18th I took f ʒiv, on the 19th I took f ʒv, and on the 20th f ʒvj. On the 21st I was called out of town, and was thus obliged to intermit my experiments for a few days. On the 28th of November I began again by taking f ʒvj. On each of the three following days I increased the dose by f ʒij, taking f ʒviij, f ʒx, and f ʒxij, on November 29th, 30th, and December 1st respectively. I did not take any conium on the 2d of December; on the 3d I swallowed f ℥ij in Mr. Hemingway's presence.

The quantities above stated were taken in single doses, mixed

with a little water, from 1½ to 2½ hours after breakfast. In order that the body should be well prepared for the poison, I took, most mornings, on getting out of bed, ʒj of bicarbonate of potash in a draught of water, sometimes alone, sometimes with a small proportion of tartaric acid. By this means the urine was preserved alkaline until late in the afternoon. The other mornings I purposely abstained from this or any other preparative measure.

I carefully looked for effects, but found none after any of the doses, excepting a stimulant action from the larger quantities of spirit. There was no disorder, nor diminution of muscular power. The pupil, definition in the vision of near and distant objects, the pulse and all the functions remained in their usual state, and the secretions were active and normal. During the whole of the time I was working harder and longer than usual, and sleeping less; nevertheless there was no sense of fatigue, neither drowsiness nor tendency to inaction. Every other day I was actively engaged with body and mind, and usually walked from four to seven miles. On the alternate day I remained quiet, and was chiefly employed in study. Immediately after taking the ʒxij of tincture on the 3d of December, I sat down and wrote my letters, and then entered upon some microscopical investigations, and continued them, with a single break of an hour, for eight hours consecutively. On this and other similar occasions I retired to bed without the feeling of mental fatigue which I frequently experienced after prolonged microscopical work. It so happened, in fact, that at the time I was following my experiment upon the tincture of conium, I was in vigorous health, and this was in no way affected by the drug.

The other subject of my experiments was in a very different condition. She was a pale, delicate, emaciated woman, and confined to bed by the pain and constitutional disturbance attendant upon the formation of a very large abcess in the right loin. Her pulse was 108 and feeble, and she was restless and unable to sleep. The abscess was opened on November 13th, and a pint of pus discharged. The same night I ordered as an anodyne f ʒij of the tincture above described, and directed the dose to be increased each night, provided, as in my own case, no

effect should follow. She slept well. On the following night, f ʒiij were given, and there was no sleep. On the 18th she took f ℥ss at night, but did not sleep well after it. On the 19th f ʒvij were given, and she had a good night's rest. Having used her supply, the conium was suspended for a few days, and opiates (*m*xv to *m*xxx tincturæ opii) administered instead. Meanwhile the abscess was closing, the appetite returning, and the health rapidly improving. On December 1st she took f ℥j, and on the 2d f ℥iss, which exhausted my supply. On carefully examining this woman from day to day, and with special reference to the effect of conium, neither Dr. Collie, one of the resident medical officers of the hospital, nor myself, could detect any result. Sleep followed some of the doses, but was, no doubt, totally independent of conium. Great relief followed the evacuation of the matter, and her health began to improve directly afterwards. She is now convalescent.

Examination of the Marc.—In order to make my experiments more satisfactory, I subjected the marc which Mr. Hemingway returned to me to the following process:—Placing it again in the percolator, I passed a solution of ʒj of caustic potash in f ℥viij of water through it, and subsequently washed it with water until it passed through colorless; f ℥xiv of dark brown fluid, resembling tincture of henbane in depth of color, were thus procured. I subjected this to distillation, drop by drop, collecting the first ounce and a half separately. I allowed f ℥vij more to distil, and set this aside. I then put one-half of the marc (which had been exhausted by spirit and solution of potash) into the retort to the remaining fluid, and distilled f ℥iv more. Having satisfied myself that these three fluids differed in no respect from each other, they were mixed, and presented the following physical and chemical characters, which are those of a dilute aqueous solution of conia:—Colorless at first, but becoming brown on exposure, a dirty looking, greyish, flocculent scum of greasy matter floated upon its surface; odor rank and disagreeable, yet somewhat resembling elder-flowers; taste partook of the smell, it somewhat resembled hydrocyanic acid, and left a slight acrid impression. Reaction alkaline; nitric acid added to a few drops in a test tube produced, after a few seconds, violent

effervescenee from the liberation of binoxide of nitrogen, and a yellow liquid resulted. When the action was moderated by spreading the fluids on a porcelain plate, a greenish-yellow or bright green turbidity appeared, and after a few minutes bubbles of binoxide of nitrogen began to form, and the evolution continued until the green color was removed, and a faint yellowish fluid remained. Solution of nitrate of silver produced a dirty white curdy precipitate, which readily dissolved in ammonia. When dried and heated, a flame ran instantly through it; and on further heating the charred residue, only metallic silver remained. Solution of chloride of mercury caused an abundant white precipitate, which, when boiled with potash, became yellow and heavy, and evolved an alkaline vapor. When heated, the precipitate blackened, evolved mercurial vapors, and ultimately disappeared.

With solution of acetate of lead, the fluid gave a heavy drab-colored precipitate.. With sulphate of copper, a pale blue deposit. Both precipitates dissolved in dilute nitric acid, the former with effervescence.

This fluid was carefully preserved, and, on December 4th, I took f ʒss at 11 A.M., and f ʒj at 5 P.M. On December 5th, I took ʒii at 10:30 A.M., and ʒiij at 3:30 P.M. On the 6th, I took a single doze of f ʒvj. On the 7th, a single dose of f ʒx. On the 8th, a single dose of f ʒxij, and on the 9th a single dose of f ʒij. I then subjected the remainder to the same reagents as before, and found that the fluid possessed the same reactions as it did on the day I distilled it.

No effect followed any of the doses. After taking the last dose I walked across the square to church, and, during the early part of the service, thrice experienced, within as many minutes, a momentary fluttering in the cardiac region, such as precedes faintness, but I could not fairly attribute it to the conium, for I awoke with a headache and slight nausea, and these had not altogether subsided at the time I experienced the above-mentioned sensation. Of this there was no repetition, the remainder of the headache passed off, and I was well and active during the rest of the day. During the prosecution of these experiments upon the tincture and the distillate from the marc, I abstained from alcoholic or other stimulants.

The result of these experiments goes far to prove that the tinctura conii fructûs recently introduced into our Pharmacopœia is, at least in all proper medicinal doses, an inert preparation. From Geiger's and Dr. Christison's experiments it appears that the fruit contains a larger quantity of conia than the other parts of the plant, but the fact that the green fruits contain a much larger proportion than the dry, seems to have been overlooked. We know that the active principle of the poppy is more abundant in the circulating juices of the green fruit than in any other part of the plant, and that the quantity contained in the fruit diminishes in proportion as it becomes hard and dry. It is very probable that this is the case with the conium, and that we must look for the greatest accumulation of its active principle in the green immature fruit. One question relative to the tincture still presents itself, viz.: does alcohol possess an influence antagonistic to that of conium, and, if so, how great is that influence?

78 *Upper Berkley Street, Portman Square, W.*,
Dec. 14, 1866.

(To be continued.)

ON THE PURIFICATION OF QUINOIDINE.

M. de Vry, in the "*Journal de Pharmacie et de Chimie*," says: "Commercial quinoidine is never pure; M. de Vry has proved it to contain sometimes as much as 30 per cent. of foreign matters. His purifying process is founded on M. Pasteur's observation that nine parts of quinoidine triturated, and kneaded a long time in a mortar with a diluted solution of two parts of neutral oxalate of ammonia, and by entirely dissolving, while disengaging ammonia, and abandoning the foreign matters. But while M. Pasteur operated at the ordinary temperature, M. de Vry advises the use of heat.

The following is the process by which he proposes to purify quinoidine, and consequently render it fit for medical purposes: Boil, in an iron vessel, nine parts of quinoidine, with a diluted solution of two parts of neutral oxalate of ammonia, until ammonia ceases to be disengaged. As part of the insoluble matter will attach itself to the sides of the vessel while boiling, add

distilled water from time to time, so that this part may be covered during the boiling, and thus be continually in contact with the ammoniacal solution. As soon as ammonia ceases to be disengaged, let the liquid get quite cold, and if the addition of water does not cause it to become turbid, dilute it with that liquid. Then filter the liquid, and precipitate it in a capsule by means of an excess of caustic soda solution.

Collect by means of gentle heat, the glutinous precipitate at the bottom of the capsule, then descant the clear alkaline liquid, and wash the precipitate of quinoidine several times in distilled water. Then expose the still glutinous quinoidine thus purified for some time to a temperature of 100° to 110° C., which will thus lose the little water it retained, and finally become, when cold, hard and friable. Oxalate of ammonia is used for the purpose of getting rid of the lime usually contained in commercial quinoidine.—*The Drug. Cir. and Chem. Gaz.*

ON THE SEVERAL MODES OF ADMINISTERING OLEUM MORRHUÆ.

By Joseph Adolphus, M. D.

Cod oil to many stomachs is exceedingly nauseous, and it is with difficulty that such persons are induced to take it. This is particularly so of the darker shades of the oil. Often it is a severe task on the physician to devise ways and means whereby an intolerant stomach may be induced to retain it.

The greatest objection I have encountered is the complaint many persons make, that they "taste the oil for a long time after taking it." This is induced by three causes. 1st, a deep seated prejudice against the oil. 2d, a singular state of the nervous coat of the stomach, which prevents the digestion of the oil; and 3d, from idiosyncrasy. The first is overcome by persistence, cautious management and small doses of the oil. I have often commenced on five drops of oil three times a day, increasing by one or more drops on each occasion till I have got the stomach accustomed to and tolerate the oil in ℥ss. doses. Three cases in particular, delicate females, who so

utterly rejected the oil as to have severe seasons of nausea come on even on "mentioning oil to them."

I commenced by inducing these ladies to take five drops of oil and lime water three times a day. The effect was encouraging. The doses were gradually increased, and in eight days one did take a teaspoonful at a dose. In another the same dose was tolerated in two weeks. And the third succeeded in taking the same quantity in twenty-three days. At the expiration of forty days each took a table-spoonful three times per diem without any effort. These were the worst cases that have fallen under my care.

The second is a specific form of dyspepsia engendered in the submucus tissue of the stomach. The digestive force appears to be seriously disturbed. Acid emitations, or cardialgia, or a peculiar form of neuralgia of the organ occurs, or the patient complains of a disagreeable weight in the "pit of the stomach," or the action of the heart is disturbed both in frequency and regularity. The sympathetic distribution coming from the semilunar ganglion and the lolor plexus and the pneumogastric nerve, form a dense net-work of nerve tissue in the stomach. When any derangement is present, more particularly in the sympathetic centers, cod oil appears to be most obnoxious, and increases all the difficulty. This is overcome readily by the acetum opii ("Black drop,") or by acetate of morphia.

I have found the union of the oil with lime water just sufficient to form a soap, and flavored with oil of bitter-almonds to be an excellent form. A gentleman now under my care, showed so severe a front that I despaired of even succeeding to induce him to keep the oil down. At length I received a chest of oil from John C. Baker & Co., Philadelphia; this oil set remarkably well on his stomach. This gentleman informed me that his stomach tolerated the Philadelphia oil in a remarkable manner.

But opium appears to quiet the abnormal condition of the sympathetic ganglion, especially the prevertebral center in front of the aorta and the plexus of the celiac axis. Saturated tincture of lobelia seeds, in very small dose, *far short* of nausea, with the morphia act remarkably well in many cases.

I have frequently found that giving the oil but once a day, between supper and bed time, for the first week, and then adding a dose two hours after dinner, works well. Chewing a clove before taking the oil prevents the taste being impressed. An excellent remedy is the oxalate of cerium in this state of the stomach. I have repeatedly ordered it, either alone or with extract of conium, with the happiest results. Here I place my confidence. But I never neglect uniting the oil with the lime water.

The third condition must be overcome by adding to the oil its bulk of glycerine. I prefer Bower's of Philadelphia. Chloroform thoroughly mixed with the oil by long agitation has overcome the difficulty. But it must never be lost sight of that, whenever any difficulty is experienced in taking the oil, it must be administered in *very small* doses, so as to gradually and cautiously accustom the stomach to the remedy. Furthermore, many cases, in which the oil was at first exceedingly repugnant and disgusting, by perseverance and the cautious adoption of adjuvants, &c., all repugnance was eventually overcome, and the greatest benefit possible was derived and experienced from its use.

I have found the oil manufactured by John C. Baker & Co., of Philadelphia, the best I have ever used. It is remarkably pure. One patient assured me "that it tasted like almond oil," while a young lady observed to me that she "could eat it as a relish on her bread."

Often it occurs that the oil after its passage from the stomach into the duodenum causes a disturbance in the bowels. I have relieved this by ordering, an hour after the oil is taken, the aromatic spirits of ammonia. At other times small portions of sulphur taken with the oil accomplishes the purpose. But these cases are true cases of duodenal dyspepsia and require treatment for that. To accomplish a cure in such cases I generally order: ℞. Reduced Iron ʒii., Hypophosphite Lime ʒi., Hydrastine ʒiv. [verberin.—Ed.]; triturate well; take four to eight grains three times a day. A decoction of Rhatany taken several times a day, works well. But if the tongue is red the hydrochloric acid with the tincture of iron is often the best

remedy. If it is white, pasty or broad and furred, I order bicarbonate of potassa and podophyllin, the latter in one-tenth grain dose, four or sixt imes a day.

In this duodenal disturbance opium and iodine are splendid remedies, and aid the oil digestion greatly. Thus: R. opii pulv. gr. vi., iodine gr. ii., ext. nux vomica gr. iv.; triturate well and make into twelve pills. One or two for a dose, repeated as often as needed, but never less than three times a day.

In taking cod oil it must never be forgotten that the diet must be of the most nourishing kind and easily digested. But I cannot close without referring to the flour of malt as a part of the diet, especially of children, where there is any difficulty in the digestion of the oil; the malt flour made into pap with wheat flour and used as a constant food as nearly as is agreeable and consistent, during the first week and sometimes even as late as into the third.

By this means digestion of the oil will be most happily accomplished. In very many cases I have found that in combining the cod oil and the syrup of the phosphates of iron, quinine and strychnia, that both were heightened in their therapeutic action and tonic effect.

Hastings, Michigan, March, 1867.

[This article was received too late to be placed among the original papers.—ED. AM. J. PH.]

Minutes of the Philadelphia College of Pharmacy.

The Annual Meeting of the Philadelphia College of Pharmacy was held at the College hall, on the evening of the 25th March—thirty-four members present—the President of the College, Charles Ellis, presiding.

The minutes of the last meeting were read and approved. The minutes of the Board of Trustees were read by Mr. Alfred B. Taylor, Secretary of the Board. The minutes of the Board inform that the matriculants of the late session of the school of the College numbered about 160 and that, at the commencement on the 15th inst., the degree of Graduate in Pharmacy was conferred upon forty-two candidates, as follows:—

Allaire, Charles B.,	Aurora, Ill,	*Soluble Citrate Magnesia.*
Archibald, Henry C.,	Philadelphia, Pa.,	*Sugar-coated Pills.*
Bartram, Ernest,	" "	*Our National Pharmacopœia.*
Blizzard, Jos. E.,	" "	*The Language of Prescriptions.*

Borhek, J. T., Jr.,	Bethlehem, Pa.,	*Gillenia Trifoliata.*
Boring, Ed. McC.,	Lancaster, "	*Eupatorium Perfoliatum.*
Bourke, Jos. M.,	Philadelphia, "	*The History of Pharmacy.*
Brown, Samuel A.,	" "	*Cypripedium Pubescens.*
Brown, Thomas J.,	Rockdale, "	*Boletus Laricis.*
Buckman, James,	Bristol, "	*Hydrangea Arborescens.*
Carberry, P. J. L.,	Philadelphia, "	*Pharmaceutical Duties.*
Croft, Samuel F.,	Chambersburg, "	*Centaurea Benedicta.*
Cuthbert, Richard W.,	Athensville, "	*Podophyllum Peltatum.*
Erwin, Bertine S.,	Bethlehem "	*Ricinus Communis.*
Haig, Charles R.,	Philadelphia, "	*Gentiana.*
Hambright, Elwin A.	Mount Holly, N. J.,	*Melia Azedarach.*
Harding, Henry,	Philadelphia, Pa.,	*Hamamelis Virginica.*
Harner, James M.,	Reading, "	*Carya Alba.*
Harry, Jacob,	Hagerstown, Md.,	*Adiantum Pedatum.*
Hays, N. W. C.,	Burlington, N. J.,	*Phytolacca Decandra.*
Himmelwright, F. E.,	Philadelphia, Pa.,	*Potassæ Permanganas.*
Hoffman, John V.,	Baltimore, Md.,	*Krameria Triandra.*
Jones, Edward B.,	Medford, N. J.,	*Baptisia Tinctoria.*
Kurtz, Aug. M.,	Chester, Pa.,	*Sanguinaria.*
Little, Arthur H.,	Philadelphia, Pa.,	*Oxide of Zinc.*
Locusson, Jos. S.,	" "	*Physicians Prescriptions.*
McMinn, Jos. H.,	Williamsport, "	*Cornus Alternifolia.*
Moore, Charles C.,	Philadelphia, "	*The Dawn of Chemistry.*
Mosely, A.,	" "	*Agathotes Chirayta.*
Roche, William F.,	" "	*Nepeta Cataria.*
Shivers, Charles, Jr.,	" "	*Chenopodium Anthelminticum.*
Simes, Samuel,	" "	*Coptis Trifolia.*
Simpson, George T.,	" "	*Chiretta.*
Swaim, George M.,	Newark, N. J.,	*Sumbul.*
Tait, Stewart,	Philadelphia, Pa.,	*The Relative Duties of Physicians and Druggists.*
Taylor, James,	" "	*Erigeron Canadense.*
Vandegrift, J. P.,	Haddonfield, N. J.,	*Hamamelis Virginica.*
Webb, Samuel W.,	Philadelphia, Pa.,	*Caulophyllum Thalictroides.*
Weichselbaum, J.,	" "	*Xanthoxylum Frazineum.*
Weideman, Charles A.,	" "	*Spigelia Marilandica.*
Wike, Albert D.,	Sadsburyville, "	*Baptisia Tinctoria.*
Woodward, Charles E.,	Marshalton, "	*Lau anum.*

The minutes of the Board of Trustees farther inform that a portrait of Prof. Robert Bridges, M. D., was presented to the College by the Zeta Phi Society.

The subject of increased accommodations for the school of the College, which had engaged the attention of the Board, was discussed by the members, and, on motion, it was

"*Resolved*, That a committee be appointed by the College to confer with the committee appointed by the Board of Trustees, and to report to a special meeting of the College."

To this service the President appointed Robert C. Davis, Thomas H. Powers, Thomas P. James, John C. Savery, Henry N. Rittenhouse.

The minutes of the Board of Trustees also inform of the transfer of the Chair of *Pharmacy* to Prof. Parrish, and that of *Materia Medica* to Prof. Maisch; and that a course of instruction on *Botany* would be given during the summer months by Prof. Maisch. The Board altered the title of the Professorship of Materia Medica to that of "Materia Medica and Botany."

The following preamble and resolutions, offered by Prof. Parrish, were unanimously adopted:—

Whereas, This College has learned, by the reading of the minutes of the Board of Trustees, that an extensive collection of fine chemical and pharmaceutical preparations had been added to the cabinet of the College by Messrs. Powers & Weightman, manufacturing chemists of this city; therefore,

Resolved, That the thanks of the College are hereby tendered to Messrs. Powers & Weightman for their liberal and valued gift, and that it be placed in a separate case in the College hall.

Also, *Resolved*, That the thanks of the College are hereby tendered to our late President, Daniel B. Smith, for his valuable gift of ninety volumes of the Annales de Chimie et de Physique, donated to the library of the College.

The minutes of the Board of Trustees farther inform that a set of the American Journal of Pharmacy, as far as it could be completed, had been presented to the American Philosophical Society, in return for which, the Society had ordered the presentation to the College library of a set of their published transactions, and placed this College on their list of corresponding societies.

The report of the Publishing Committee was read and accepted, as follows:—

"The Publishing Committee respectfully report that the Journal has been regularly issued during the past year. Since the war, the list of subscribers has gradually increased, and the number now printed is the same as formerly. The subscription price remaining unchanged, while the cost of materials and labor have so much advanced, has deterred the editor from employing as many illustrations as would be advisable; but he hopes soon to have a change in this regard. Heretofore, the foreign exchanges have been but few. The Editor has made arrangements for visiting Europe the present season, and hopes to be able to increase these, and to obtain other facilities for the improvement of the Journal. During his absence, Prof. Maisch and Mr. A. B. Taylor will assume the editorial duties. The appended report of the Treasurer of the Committee will exhibit the condition of the finances."

This report shows the expenses of publication, the past year, to have exceeded the receipts from the Journal by the sum of $175.

The report of the Committee on Labels exhibits a balance in the hands of the Treasurer of the Committee of $626.33.

The report of the Treasurer of the Sinking Fund informs that $400 had been paid on account of the debt of the College, leaving a like amount

yet due. This constitutes all of the old indebtedness of the College remaining unpaid.

The Treasurer of the Committee on Labels was directed to pay to the Sinking Fund Committee the sum of $200, and to the Publishing Committee an amount sufficient to liquidate their indebtedness.

The resignation of E. R. Perrot was read and accepted.

A communication from Francis N. Figuero, island of Cuba, was referred to the Board of Trustees.

Prof. Procter read a translation of printed communications from the Society of Pharmacy in Paris, relative to an International Pharmaceutical Congress, to be convened in Paris in August next. The subject having been considered, it was resolved that this College appoint delegates to said Congress, and that they be elected by ballot.

A communication from Mr. Jacob Krummeck, Santa Fe, New Mexico, to the Corresponding Secretary, relative to some indigenous plants of that region, was referred to the Publishing Committee.

The Committee on Deceased Members made a verbal report through their Chairman, and were continued.

Written communications were read from Samuel F. Troth and Dillwyn Parrish, declining re-nominations for the office of Vice-Presidents. These declinations called forth a general expression of regret at the prospect of losing the services of our present valued and highly esteemed officers. On motion, the Secretary was directed to record the letters of declination on the minutes.

The annual election being ordered, Wm. J. Jenks and James T. Shinn, acting as tellers, reported the election of the following officers:—

President,	Charles Ellis.
First Vice-President,	William Procter, Jr.
Second Vice-President,	Dillwyn Parrish.
Treasurer,	Ambrose Smith.
Recording Secretary,	Charles Bullock.
Corresponding Secretary,	Alfred B. Taylor.

Trustees.

Robert Bridges, M. D., T. M. Perot, Jas. T. Shinn,
T. S. Wiegand, S. N. James, S. S. Bunting,
D. S. Jones, J. M. Maisch.

Publishing Committee.

Charles Ellis, Edward Parrish, A. B. Taylor,
J. M. Maisch, William Procter, Jr.

Committee on Sinking Fund.

Samuel F. Troth, Edward Parrish, Ambrose Smith.

Delegates to American Pharmaceutical Association.

E. Parrish, Jas. T. Shinn, H. N. Rittenhouse,
A. B. Taylor, Evan T. Ellis.

Delegates to the International Pharmaceutical Congress of Paris.

William Procter, Jr., Edward Parrish, John M. Maisch,

On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

INTERNATIONAL PHARMACEUTICAL CONGRESS AT PARIS, 1867.

Second Session of the International Congress of Associations and Societies of Pharmaceutists, organized by the Society of Pharmacy of Paris.

In the sitting of the 16th of September, 1865, the International Congress of Brunswick decided that it would hold a second session of the Congress at Paris.

By a second resolution the Congress referred to a special Committee the duty of determining the organization of this session.

This committee was composed of the following members:

MM. de Schröders, for Russia; Robinet, for France; Beckert, for Austria; Rickher, for the Pharmaceutical Union of Southern Germany; Docter Bley, for the Pharmaceutical Union of Northern Germany.

The Committee decided that the second session of the International Congress will take place at Paris in 1867, and that its organization will be confided to the Society of Pharmacy of Paris.

In consequence of these decisions, the Society of Pharmacy of Paris has prepared the Regulations for the second session of the International Congress.

REGULATIONS.

1st. There will be an International Congress of Associations and Societies of Pharmaceutists of all Countries in Paris in 1867.

2d. The Congress will be formed exclusively by the assemblage of delegates of Associations and Societies of Pharmaceutists regularly constituted.

It will have for its object the discussion of scientific and professional questions interesting practical Pharmacy, and the consideration of the measures most appropriate for enabling Pharmaceutists to perform their mission and the duties they owe to the public interest.

3d. Each Association or Society will be entitled to delegate three of its members; but this delegation will have but one vote in the deliberations, so that each Society will possess but a single vote.

Nevertheless the three Delegates of a Society may individually take part in the discussion of propositions put in the order of the day.

Societies or Associations embracing all the Pharmaceutists of a country are entitled to represent themselves by three delegates for every one hundred members in the Society or Association.

4th. The Delegates of one Pharmaceutical Congress are not rightfully delegates to the following Congress.

5th. Delegates should possess written credentials emanating from the Society or Association they represent in the Congress.

6th. In the first sitting the President of the Committee of Organization will proceed by ballot to the nomination of officers. These shall consist of, first, a President; second, five Vice-Presidents; third, a Secretary, and fourth, three Vice-Secretaries.

7th. The officers will be charged with the publication of the minutes.

8th. The various questions submitted to the Congress will be submitted to special committees for consideration and report.

9th. The discussions will generally be in the French language. For aiding the deliberations, the Commission will provide capable interpreters.

10th. No memoir on the questions before the meeting can be read but with the consent of the officers.

11th. Decisions will be made by a majority of votes.

12th. A Committee of Organization, designated by the Society of Pharmacy of Paris, and composed of the Titular members of that Society, will be charged with all the measures preparatory for the meeting of the Congress. It will receive the requests, propositions and communications of all Pharmaceutists who think proper to address it. Memoirs which treat on the questions in the Programme should be sent positively before the 15th of June, 1867.

13th. The Committee will draw up, under the direction of the Society of Pharmacy of Paris, the Programme of the meeting of the Congress of 1867, and will publish it in good time in the largest number possible of Pharmaceutical Journals of all countries.

14th. Before the close of the second session, the Congress will nominate, if it so decides, a Committee to prepare for a third.

15th. Associations and Societies of Pharmaceutists who intend being represented in the Congress are requested to send in advance, and in all cases before the 1st of August, 1867, the names and addresses of their delegates.

16th. M. Robinet, Commissioner General, is empowered to conduct the correspondence relating to the meeting of 1867 at Paris, Rue de l'Abbaye, Saint-Germain, 3.

PROGRAMME.

Pharmacy in Europe at this time is in an unhealthy and critical condition, not less injurious to the true interests of society than to those of the profession itself. This critical situation has been explained by the Congress of Brunswick, and that body has given the results of its deliberations in the form of Resolutions, which represent the opinion of the majority of its members. These resolves have been expressed in the following terms:

1st. Pharmacy should be recognized by the State, not only as a simple department of industry, but as a learned corporation and as an integrant part of the Sanitary Body.

2d. Pharmacy ought to exercise a direct influence on the ordinances bearing upon its scientific and professional interests.

3d. Pharmacy should be protected by the State from the attacks on its rights, from whatever source they may arise.

Notwithstanding the wisdom of these views, the importance of the considerations which have suggested them, and the authority of the Assembly which has issued them, the question as to the *part* that Pharmacy should act in the civilized world, and the conditions necessary for its rational organization in relation to the social economy are too grave to be considered as definitely resolved.

Nobody at this day will deny the place due to chemistry and the part which belongs to it in social progress, yet few persons appreciate at its proper value the influence that Pharmacy has exercised on the rise and developement of modern chemistry.

It is therefore indispensable to revive again this fundamental question before the public assembly of the Societies of Pharmacy from all parts of the world, convened at Paris by the International Congress of Brunswick.

At this juncture, when various States seek with the greatest earnestness to generalize the employment of weights, measures and money of a uniform type, the Congress will naturally be led to recognize the necessity of a Codex or legal formulary which will be the guide for the Pharmaciens of all countries. This Codex will insure uniformity of composition in the most important medicines that have been recognized by universal experience in the shops (pharmacies) of all countries.

For these reasons the Committee of Organization of the International Congress of 1867 propose the following questions:

First Question.—The Constitution of Pharmacy.

What character should be attributed to the Pharmaceutist? What are the functions he should perform and what conditions ought he to accomplish in order to acquit himself of his professional obligations?

Second Question.—The consideration (study) of the means of compiling a Codex or legal universal formulary of officinial medicines, for which it is important to establish a uniform composition in all the *Pharmacies* of the civilized world.

Third Question.—Give the best and most practical means of determining the proportion of active principles, especially of alkaloids in the drugs containing them, and in the pharmaceutical preparations of which these drugs are the base, such as opium and the opiates, cinchona and the preparations of bark, etc.

The meetings will be inaugurated on the 21st of August, 1867, at noon precisely, in the session room of the Society of Pharmacy of Paris, at the Superior School of Pharmacy, Rue l'Arbalète.

The meeting will continue five days.

The Commissioner General,

ROBINET,

at Paris, Rue de l'Abbaye-Saint-Germain, 3.

[The above circular, enclosed with the following from the Committee of the Society of Pharmacy of Paris, was received by the Editor:]

SOCIETY OF PHARMACY OF PARIS,

International Congress of Associations and Societies of Pharmaceutists.

SIR AND MUCH HONORED CONFRERE:

We have the honor of sending you the Regulations and Programme of the second session of the International Congress of Associations and Societies of Pharmaciens.

The Committee begs you to give these documents the greatest possible publicity, that the meeting of 1867 may exert, by its importance, a happy and decisive influence on the future of Pharmacy, the progress of the art and the public interests which are inseparable from them.

We hope that the nature of the questions proposed will engage the Pharmaceutical Associations of all countries, who send delegates to the Congress of 1867, which, also, will occur under unusual circumstances—during the International Exhibition.

Receive, sir and much honored confrere, the assurance of our devotion.

The members of the Committee,

MM. GUIBOURT, President,
BOUDET, LEFORT,
BUIGNET, MIALHE,
GOBLEY, ROBINET, Commissioner General.

In the sitting of December 5, 1866, the Society of Pharmacy of Paris appointed MM. Dumas of the Institute, Bussy of the School of Pharmacy and Guibourt, President of the Society of Pharmacy, its delegates to the International Congress. ROBINET, *Comm. Gen.*

Editorial Department.

TO OUR READERS. VISIT TO EUROPE.—The Editor of this Journal, having made arrangements to visit Europe during the ensuing spring and summer months, desires to offer as a reason for the untimely appearance of the May number his wish that but two numbers should be due before the period when he hopes to resume his editorial labors, (September 10th.) While absent, the Editor proposes to institute a correspondence with the Journal, and thus continue his connection with his readers; yet, the burden of the editorial chair will be sustained by the kind offices of his friends, Prof. Maisch and Mr. Alfred B. Taylor, of the Committee of Publication. The Editor takes this opportunity to ask the friends of the Journal for their aid, in the way of original contributions, during his absence, and to ask their friendly consideration for any delay which may arise from that cause. All communications referring to

editorial matters should be addressed to Prof. John M. Maisch, 1607 Ridge Avenue, Philadelphia, until September next. All business letters referring to the finances or distribution of the Journal must be sent to Charles Ellis, Son & Co., north-east corner of Seventh and Market Streets.

Mr. Peabody's Munificence.—The extraordinary liberality of George Peabody, in the endowment of literary and scientific institutions during the past year, 1866, is worthy of notice by every journalist to whom science and education is dear. One hundred and fifty thousand dollars were given to Harvard, to maintain a Museum and Professorship of American Archæology and Ethnology; $150,000 to Yale College, for the establishment and maintenance of a Museum of Natural History, especially of the departments of Zoology, Geology and Mineralogy. Besides these gifts, the donor has already given $1,000,000 to the Peabody Institute, Baltimore; $250,000 to the institution bearing his name in his native town of Danvers, Mass.; $25,000 to Phillip's Academy, Andover, Mass.; $25,000 to Kenyon College, Ohio, both for the extension of instruction in the natural sciences and mathematics; $20,000 to the library of the Maryland Historical Society, and several other smaller donations in Massachusetts and Vermont.

More recently we learn from the papers that a very large sum in cash and bonds, amounting to about two millions of dollars in all, has been intrusted to a board of gentlemen for the promotion of education in the Southern States. The influence of these noble gifts on the next generation must be sensibly felt, and will form a monument to the donor's munificence more deserving than granite or marble.

On the Relative Positions of the Physician and Apothecary in the Sale of Liquors and Wines for Medical Purposes, as regards the Internal Revenue Liquor Law.—Whatever may be the practice of druggists and apothecaries in the sale of liquors without a license, the law of Congress is sufficiently explicit that they shall require a written prescription from the physician. Those apothecaries who conscientiously desire to act up to the legal requirements are met by the difficulty that physicians are constantly prescribing liquors, especially brandy and whisky, without writing a prescription for them. That large portion of the public who use liquors only as medicines prefer to get them, when needed, of the apothecary; and, unless he happens to be among the few who make liquors a business speciality and take out a license, he is unable to supply the demand legally—merely because the physician has not performed his part. The object of this article is therefore respectfully to request our medical cotemporaries to direct the attention of their readers, by some pointed remarks, to the importance, on all occasions when they prescribe liquors not in possession of the patient, to do it in writing. This course will greatly subserve the cause of temperance, relieve the

apothecary from a false position in the view of patients, and save him from the temptation to enter the liquor trade, to meet the difficulty arising from a limited legitimate demand for good liquors.

PHARMACY IN CHICAGO.—For several years past, the Chicago College of Pharmacy has been dormant, and ceased to exercise the functions it so bravely commenced with several years ago. Recently, several members determined to attempt the re-animation of the College; and, taking advantage of the reception of a fine set of specimens of chemicals, presented to the College by Messrs. Powers & Weightman, a meeting was called to examine them, and take action on the condition of the College, by a circular directed "to the Druggists of Chicago," by Henry Sweet, Secretary, dated Feb. 20, 1867.

By a notice in the *Chicago Republican* of Saturday, March 2d, we learn that a meeting was held on Wednesday, Feb. 27th, 1867, which resulted in the election of Mr. E. H. Sargent, *President;* George W. Buck and W. H. Muller, *Vice-Presidents;* James W. Mill, *Secretary;* J. P. Sharp, *Treasurer;* Albert E. Ebert, Henry Sweet, John F. Ehrman, William Reinhold and Emil Dreier, as *Trustees.*

Mr. Robert J. Brown, of Kansas, was elected an associate member; action was taken in regard to the extension of the cabinet, to which the specimens above alluded to were deemed a very valuable and important addition; and also steps were initiated to commence a library. It was determined not to revive the school of pharmacy at present, but to look forward to that and other measures for the amelioration of pharmacy in Chicago. We believe there is enough of the right material among the members to warrant success. What is needed most is a small corps of persevering, talented, self-sacrificing young men, who will do the nursing for a while until the latent energy of the body is completely revived. There are several of this class ready for the work, and there is no good reason why the Chicago College of Pharmacy should not attain to a solid and lasting condition of usefulness. A letter received from Mr. James W. Mill, since the above was written, speaks encouragingly of the feeling existing, and thinks it promises good results. The revival has our cordial good wishes, and it will afford unmixed pleasure to chronicle in this journal every advance made, until the Chicago College is firmly established, with a School of Pharmacy based on deep and broad foundations adequate to sustain a superstructure suitable to the future wants of so large a community.

PROF. BENJAMIN PIERCE, of Harvard University, has been appointed, by the President, the successor of Prof. Bache, as Superintendent of the Coast Survey. The appointment is said to give general satisfaction to scientific men capable of judging of the amount of labor and the kinds of talents required in this responsible position.

THE INTERNATIONAL PHARMACEUTICAL CONGRESS AT PARIS, 1867.—The Committee of the Society of Pharmacy of Paris have issued a circular of invitation to all regularly constituted Pharmaceutical Associations, to send delegates to the Congress to be held in that city in August next, and that our readers may have an opportunity to know its objects we have translated, as literally as possible, both papers, which will be found at page 280.

The matter was brought before the Annual Meeting of our College on the 25th of March, and delegates were appointed to attend the Congress. (See the minutes at page 276.)

The questions stated in the programme should be fully considered by our College, and its delegates should be duly instructed in its views, that the matter shall be more than a mere form. Great variations exist in the constitution of the pharmaceutical body in Europe; on the continent the influence of the governments is felt more decidedly in Russia and Germany than in France, and in England much less than in France, while in the United States Pharmacy is absolutely free from special legislation. The question, what degree of freedom from State interference is most advantageous to the progress and success of our scientific art, viewed in reference to the community, has been agitated in Germany for several years, and some of our foreign brethren are interested to know how our unlicensed pharmacy meets the demands which in all situations must be made on its practitioners. The questions arising out of sale of poisons—the feasibility of introducing here the decimal weights into Pharmacy, and lastly the new idea of a universal Pharmacopœia for all civilized nations, are sufficiently interesting to invite reflection by our members and promote a general discussion in the meetings.

ERRATA.—Page 114, vol. xxxix., March, 1867, 13th line, omit the word "drying." Page 116, same volume, first line from bottom, read "Zingiber nigra; second line from bottom, "Zingiber alba." Page 189, fifth line from bottom, read "1865." Page 154, for "Brown's glycerin," read "Bower's glycerin," an error of the press in the *Medical and Surgical Reporter*.

The Commencement of the Philadelphia College of Pharmacy was held in the Academy of Music, March 14th, 1867, on which occasion the degree of Graduate in Pharmacy was conferred upon forty two students of the Class of 1866–67, who had successfully passed the examination, by Dillwyn Parrish, Esq., Vice-President of the Institution. The occasion was the most marked of its kind that has yet occurred as regards the number of graduates, the great concourse of spectators who filled the large hall of the Academy, and the numerous guests and members of the College who occupied the stage. The valedictory address was given by Prof. Robert Bridges, after which Mr. Bertine S. Erwin, on behalf of the Zeta Phi Association of the students, in a short appropriate speech, presented to the

College, on behalf of his association, a portrait of Prof. Bridges, for the College Museum Hall. Prof. Edward Parrish, on behalf of the Board of Trustees, in a few feelingly apposite remarks, acknowledged the gift, and commented on the well-deserved honor which it reflected on the veteran professor of chemistry.

The last feature of the ceremony—one which has grown up of latter years until it is time to curtail its proportions—was the presentation of boquets of flowers to the graduates. On two side-tables, during the gathering of the audience, the friends of the graduates had piled up their floral contributions until two pyramids of beauty were formed. When the time arrived these were wheeled into the centre of the platform, and Profs. Maisch and Parrish, calling out the names appended to each, distributed them to the lucky recipients. Fortune, as usual, was wayward in her gifts, for while one gentleman was favored with eight boquets, many received but one and a few were wholly forgotten. All went off favorably and happily, and the occasion will be long remembered.

On the action of Medicines in the System.—By Frederick William Headland, M. D., Fellow Royal Coll. Phys., etc. Fifth American, from the Fourth London Edition. Philada.: Lindsay & Blackiston, 1867. pp. 431. octavo.

The last American edition of Headland was in 1863, from the third English edition of 1859. The present volume is the fifth American from the fourth English edition, the author's preface of which is dated November, 1866. The author has aimed to improve without enlarging it, and in fact, notwithstanding "a considerable number of fresh observations and discoveries, some of them of considerable importance, and representing the labors of therapeutists of all nations during the last seven years, have been noticed in their proper places in the present volume," yet the actual number of pages is less than in the fourth edition, a fact due to the use of smaller and more compact type. The paper is excellent, the binding good, and the typography unexceptionable. So much for this part of the subject. The general character of the work for accuracy, its high standing among treatises of its kind, and the elegant diction of its accomplished author need no comment; they are well known to our medical readers; but it may be asked of what use is the book to the pharmaceutist? What does he need that its pages embrace? Why should the book be noticed at all in a pharmaceutical journal? We reply that it is not addressed to the pharmaceutist, nor is it a *necessary* volume for his shelves; yet the whole subject of Therapeutics, of which this work forms an important part, should certainly interest a class of individuals whose daily engagements as dispensers are actively connected with the agents producing the phenomena of which this volume treats. It is true that very much mystery yet involves "the action of medicines in the system," and much of what our author has to treat is hypothetical, at least not proven; nevertheless, the

vast importance of the results he aims at to rational medicine, and the deep almost romantic interest which gathers around such subjects as opium, bark, nux vomica and calomel, viewed from the stand-point of the practising physician, have sufficient interest to pharmaceutists who aim at something beyond the pestle and mortar. to invite their perusal of this admirable volume.

The half yearly Abstract of the Medical Sciences.—Being an analytical and critical digest of the principal British and Continental medical works published in the preceding six months. Vol. xliv. July—December, 1866. Philadelphia: Henry C. Lea, 1867. pp. 299. octavo. From the publisher.

We have only space to say that this volume is rich in valuable articles, among which there are many on Materia Medica and Therapeutics. Gathered from all sources in the new books and medical journals of Europe and America, this work may be viewed as the cream of that class of medical essays, and is a useful occupant of the physicians office-table to keep him reminded of the progress of medicine.

OBITUARY.

Alexander Dallas Bache, formerly of Philadelphia, and for many years the able Superintendent of the Coast Survey, died last month, at Newport, from cerebral disease, induced probably by excessive mental engagements. Prof. Bache graduated at West Point Military Academy in 1825, at the head of his class, and was immediately after promoted to assist the professor of military engineering in that institution. After a short service in the army, he received the appointment of Professor of Natural Philosophy and Chemistry in the collegiate department of the University of Pennsylvania in 1827. If our recollection serves, he was the first principal appointed to the High School of Philadelphia, and left that station, for the presidency of Girard College, in 1836, over which, however, he never presided, as, before its organization, he was appointed to the Coast Survey, on the death of Hassler, in November, 1843. "In conducting this great work," (says Silliman's Journal,) "few men could have carried to it such ample scientific preparation, so much practical wisdom, and such signal, almost unrivalled, administrative talents." He was chosen President of the National Academy of Sciences, established by Act of Congress in 1863, by that body for six years. He was genial, generous and obliging, and leaves a large circle of friends to feel his loss.